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# CANADIAN ARMY MANUAL OF TRAINING

## RCEME IN THE FIELD

(1960)

PREPARED UNDER THE DIRECTION OF  
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## INTRODUCTION

The aim of this manual is to provide a tactical and administrative doctrine for the control and operation of the various RCEME units and sub-units in a typical field force and to describe some of the problems encountered.

Since conditions will vary greatly within each field formation, chapters dealing with organization, procedures and deployment have been written in sufficiently general terms to apply equally well to all RCEME field units and to preclude the need for extensive amendments in the future.

Details of personnel strengths, vehicles and equipment mentioned should be regarded merely as a guide since establishments change frequently to cater for new commitments and equipment.

This manual is written mainly for the guidance of all RCEME officers and warrant officers and should be read in conjunction with "The Infantry Brigade Group in Battle 1960", which is divided into two parts as follows:

- a. Part 1. CAMT 1-8. - Tactics.
- b. Part 2. CAMT 1-11. - Administration.

This manual is one of a series of RCEME training manuals. The series will comprise the following:

- a. CAMT 11-1. RCEME in Canada.
- b. CAMT 11-2. RCEME in the Field.
- c. CAMT 11-3. Command of a RCEME Field Unit.
- d. CAMT 11-4. Recovery Technique.
- e. CAMT 11-5. RCEME Terminology.

## RCEME IN THE FIELD

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## CHAPTER 1

### GENERAL

#### SECTION 1 - AIM, ROLE AND RESPONSIBILITIES

##### 101. AIM

- a. The aim of the Corps of Royal Canadian Electrical and Mechanical Engineers is:

- (1) To train for war.
- (2) To assist other arms and services to train for war by maintaining their equipment in serviceable condition.

##### 102. ROLE IN WAR

- a. The role of RCEME in war is to ensure the operational fitness of the technical equipment of the army. This role is achieved by:

- (1) Effective command and control of RCEME units.
- (2) Organizing and co-ordinating efficient recovery, inspection and repair facilities at all levels.
- (3) Adequate technical advice to the staff and units.
- (4) Maintaining the technical efficiency of equipment.

##### 103. RESPONSIBILITIES

- a. RCEME is responsible in the field for:

- (1) Policy, standards and techniques of servicing and repair for electrical and mechanical equipment.
- (2) Providing personnel for the repair of electrical and mechanical equipment with the following exceptions:

- (a) Unit repairs to RCE special engineer equipment and plant which are carried out by RCE.
- (b) Unit repairs to communications equipment held by all user units except RCOC and RCEME. This is done by RC SIGS.
- (c) Unit and field repairs and recovery of vehicles in RCASC and CFMS units. This is done by RCASC.
- (3) Recovery of military equipment except in a (2) (c) above.
- (4) Inspection of military equipment to determine servicing standards and condition classifications.
- (5) Condemnation of technical equipment of RCOC supply.
- (6) Modification and conversion of technical equipment.
- (7) Assembly of new technical equipment.
- (8) Limited manufacture of items of equipment in short supply.
- (9) Preparation of equipment for special conditions of usage.
- (10) Dissemination of technical information.

## SECTION 2 - PRINCIPLES

### 104. PRINCIPLES

- a. The efficient fulfilment of the RCEME technical responsibilities depends on the observance of certain basic principles:

- (1) Co-ordination. The RCEME resources allotted to the formation commander can only develop their maximum efficiency if co-ordinated at the highest level possible. The repair and recovery plan is therefore co-ordinated normally by CREME at divisional level.
- (2) Stability. RCEME units work most efficiently under static conditions since frequent moves and unorthodox deployments inevitably retard production. RCEME commanders and advisers should impress upon formation commanders the need for good working conditions. Every effort must be made by RCEME to minimize the effect of disturbances caused by operations by adequate warning and efficient movement drills.
- (3) Foresight. Foresight means intelligent anticipation of future needs so that RCEME resources are in the right place at the right time. RCEME is a Q service, but its efficient planning is largely based on operational information obtained from the commander and his staff. By being in the confidence of their commanders and senior staff officers, and thus obtaining early information, RCEME officers can ensure that operations are not hindered by lack of RCEME aid.
- (4) Flexibility. The RCEME organization in the brigade group is designed to give support when and where required and is inherently flexible and mobile. The necessary recovery and repair facilities can be provided for every variety of grouping of the arms for battle. With the field workshop, flexibility is obtained through the forward repair group and the recovery section which send repair and recovery teams forward as required. Although the deployment of these teams is an essential RCEME contribution to saving time in the completion of urgent tasks, the efficiency of the workshop is increased when all personnel are working in one location. Squadron and

battery sections provide the flexibility in LADs.

(5) Economy. Extravagance arising from over-insurance must be avoided, particularly when planning. Real efficiency can only be achieved by the exercise of economy in personnel, equipment and, above all, time.

(6) Protection. The establishments of RCEME units are designed primarily to meet the technical needs of the formation and demands for protection and local defence can only be met at the expense of production. A most important requirement of any RCEME site is ease of protection from enemy action and although RCEME units are at all times responsible for their own local defence against enemy attack, advantage should be taken of the dispositions of other units. In certain circumstances it may be necessary for a RCEME unit to ask for protection from the unit or formation which it is supporting.

(7) Co-operation. The role of RCEME requires close liaison and co-operation with all arms and services based on mutual confidence and personal contact. It is the duty of RCEME officers at all levels to liaise closely with RCEME and other corps units with which they have to work to ensure that the RCEME services are being used efficiently, effectively and are giving satisfaction. In addition every RCEME man in the formation must be kept in the picture so that he knows the task ahead and the part he has to play.

## CHAPTER 2

### ORGANIZATION, COMMAND AND TECHNICAL CONTROL

#### SECTION 1 - BRIGADE GROUP ORGANIZATION

##### 201. GENERAL

- a. The size of the RCEME component in any formation depends on the type and amount of technical equipment held by units. RCEME personnel are found in the field workshop, LADs and in units not having LADs. Details of the organization and tasks of these units and tradesmen are shown below.
- b. Details of the RCEME personnel and units in division and corps will be covered briefly. The organization of the various RCEME HQ will be covered in Section 5, "Command".

##### 202. FIELD WORKSHOP

- a. The second line support for each brigade group is provided by a mobile self-administered field workshop commanded by a major.
- b. The workshop is organized into a headquarters and several platoons. The main functions of the field workshop are as follows:
  - (1) Field repairs to the technical equipment of the brigade group.
  - (2) Second line recovery of the vehicles and weapons of the brigade group.
  - (3) Inspection of the technical equipment of the brigade group as directed by the formation senior EME.
  - (4) Unit repairs to the workshop technical equipment.

c. Field workshops are equipped with a wide range of hand and machine tools stored or mounted in various vehicles ranging from trailers to shop vans. Additional equipment includes a mobile crane, crawler tractor and transporter, together with the normal administrative vehicles.

d. The organization of the field workshop is shown in Figure 1. Details of the organization are as follows:

- (1) HQ Platoon. This platoon comprises an administrative section and a transport and recovery section.
- (2) Vehicle Platoon. This platoon remains with the workshop and provides the continuity for field repairs to vehicles. It is assisted by the forward repair group when not deployed in the forward area.
- (3) Weapons and Wireless Platoon. The size and composition of this platoon will vary with the number and type of equipments held in the brigade group. It is responsible generally for all field repairs to technical equipment except vehicles and is capable of despatching tradesmen forward as required for inspections or repairs in situ.
- (4) Spare Parts Platoon, RCOC. This platoon provides the spares and assemblies for all the technical platoons of the workshop and is responsible for despatching forward urgent spares for the repair teams. A detachment from this platoon accompanies the forward repair group when deployed.

e. This organization will provide the following 'groups' in the field:

- (1) Forward Repair Group. It consists of tracked repair teams and wheeled repair teams from the main repair group. Each team consists of two to four tradesmen and additional tradesmen may be provided by the weapons and wireless platoon for some specific repair jobs.

(2) Main Repair Group. Basically this consists of the vehicle platoon and the weapons and wireless platoon. Forward repair teams are made up of tradesmen from this group.

(3) Recovery Group. The recovery teams will be provided by the transport and recovery section of HQ Platoon and normally will remain under command of the workshop. However, the teams employed in forward recovery will operate on formation tasks assigned by the BEME. These tasks are detailed in Chapter 3, "Recovery".

#### FIELD WKSP RCME

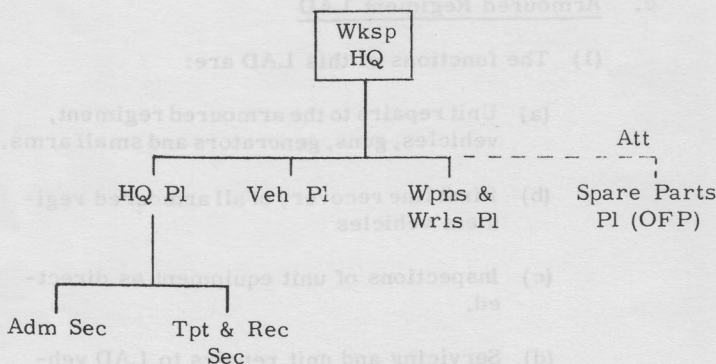


Figure 1

### 203. LIGHT AID DETACHMENTS

a. Allocation. LADs are allocated to certain units to provide first line recovery and unit repair. They contain recovery, repair and stores elements, and are equipped with welding equipment, light machinery and recovery vehicles and hand tools. They are an integral part of the parent unit and are under command of the CO of the parent unit for all purposes but receive technical instructions from BEME of the brigade group.

b. Composition. LADs vary in size and composition according to the requirements of the unit they serve and some are organized in squadron or battery sections to enable them to give adequate support to sub-units. Details of the organization and role of the various LADs in the brigade group are shown below:

#### c. Armoured Regiment LAD

(1) The functions of this LAD are:

- (a) Unit repairs to the armoured regiment, vehicles, guns, generators and small arms.
- (b) First line recovery of all armoured regiment vehicles
- (c) Inspections of unit equipment as directed.
- (d) Servicing and unit repairs to LAD vehicles, generators and small arms.

(2) This LAD is organized into a HQ and squadron sections, with approximately half of the personnel in the HQ section which carries out the heavier unit repairs which are not possible in the squadron sections. Each squadron section can support a detached squadron for a limited period and possesses its own radio communication and ARV.

- (3) The organization of the LAD is as shown below:

#### ARMoured REGIMENT LAD

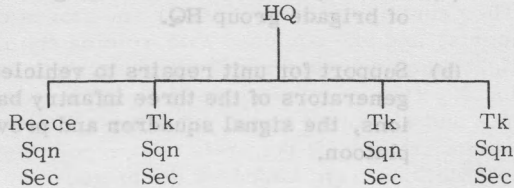


Figure 2

#### d. Field Regiment LAD

- (1) The functions of the field regiment LAD are the same as those of the armoured regiment LAD.
- (2) The establishment of this LAD is based on the current field regiment organization and is organized into a HQ and a number of sections, one for each battery or independent troop in the regiment. The battery sections operate in a similar manner to the squadron sections of the armoured LAD except that they depend on the LAD HQ for recovery support.
- (3) The organization of the field regiment LAD is shown below:

#### FIELD REGIMENT LAD

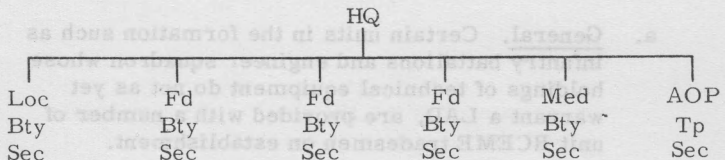


Figure 3

e. Brigade Group LAD

- (1) The functions of the brigade group LAD are:
  - (a) Unit repairs to vehicles and generators of brigade group HQ.
  - (b) Support for unit repairs to vehicles and generators of the three infantry battalions, the signal squadron and provost platoon.
  - (c) Unit repairs to small arms of the brigade group HQ, field engineer squadron, signal squadron and provost platoon.
  - (d) First line recovery of vehicles for brigade group headquarters, three infantry battalions, signal squadron and provost platoon.
  - (e) Inspection of vehicles, generators and small arms as directed.
  - (f) Servicing and unit repairs to LAD technical equipment.
- (2) The brigade group LAD unlike the armoured and artillery LADs is not designed to be split into sections. Groups of tradesmen are detached occasionally to work with elements of brigade HQ which may be located away from the main HQ.

204. UNIT RCEME TRADESMEN

- a. General. Certain units in the formation such as infantry battalions and engineer squadron whose holdings of technical equipment do not as yet warrant a LAD, are provided with a number of unit RCEME tradesmen on establishment.
- b. Role. These tradesmen are equipped with hand tools and unit spares and carry out unit repairs to equipment. They are under command of the unit, but a degree of technical supervision is exercised by the BEME. The allocation and functions of these tradesmen is shown on page 11.

c. Allocation and Functions

- (1) Infantry Battalion. Each battalion has RCEME tradesmen for unit repairs to vehicles and small arms with heavier unit repair support provided by the brigade group LAD.
- (2) Engineer Squadron. The squadron has RCEME tradesmen for unit repairs and first line recovery to all vehicles except engineer equipment.
- (3) Signal Squadron. Several RCEME tradesmen are provided whose role is identical with the infantry battalion tradesmen.
- (4) Transport Company. RCEME electrical and ancillary tradesmen are provided to support the RCASC vehicle repair tradesmen.
- (5) Ordnance Field Park. RCEME tradesmen are provided for unit repairs to vehicles only.
- (6) Provost Platoon. One RCEME tradesmen is provided for unit repairs to vehicles with support from the brigade group LAD.

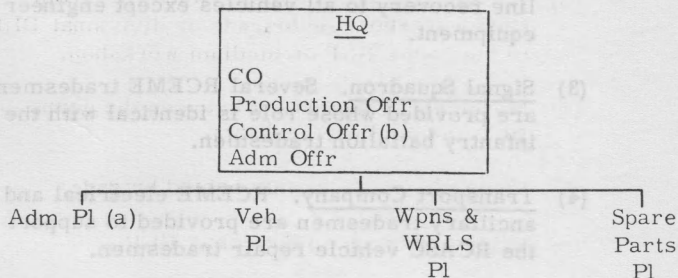
SECTION 2 - RCEME ORGANIZATIONS - DIV AND CORPS

205. MEDIUM WORKSHOP

- a. Medium workshops are fully mobile and self-administering and are provided on a scale of one per division or three brigade groups. They comprise a headquarters and several specialist platoons. They have no responsibility for recovery on a formation basis but are equipped with recovery vehicles for use within the workshop area. They are normally under corps control but may be allocated to division or brigade for specific operations.
- b. The outline organization of a medium workshop is shown in Figure 4. The role of the medium workshop is as follows:

- (1) Field repairs to all technical equipment backloaded from brigade groups.
- (2) Limited improvisation and manufacturing as directed by higher HQ.
- (3) Unit repairs to the workshop technical equipment.

#### MEDIUM WKSP RCEME



#### NOTES

- (a) Adm Pl - includes OR, QM, tpt, messing, medical and sanitation.
- (b) Control - includes control office, IN and OUT inspection, planning and NBCW decontamination.  
- control may be combined with production.

Figure 4

#### 206. CORPS RECOVERY COMPANY

- a. Corps recovery companies are allotted on a scale of one per three brigade groups and provide the third line recovery and backloading support for the formation. Equipment in the company includes recovery trucks, tank transporters and crawler tractors. The organization of the recovery company is shown below:

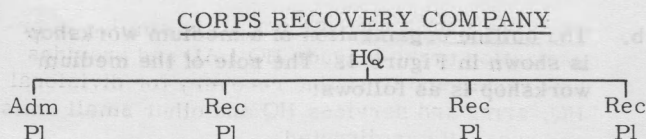


Figure 5

b. The role of the company is as follows:

- (1) Establishment of recovery posts along main formation axis.
- (2) Assistance to first and second line recovery especially during moves to and from the brigade group areas.
- (3) Backloading of equipment casualties from field workshops or brigade or divisional BLP to the corps BLP or medium workshop.
- (4) Movement of equipment between the corps BLP and medium workshop.
- (5) Route clearance mainly behind brigade.
- (6) Siting and manning the corps BLP.

#### 207. MISCELLANEOUS RCEME CORPS UNITS

- a. Corps Troops Workshop. This workshop is fully mobile and is provided on a scale of one per corps for field repairs and 2nd line recovery for corps units. Its organization, equipment and role is similar to that of a field workshop in a brigade group.
- b. Specialist Workshops. Depending on the amount and complexity of technical equipment, specialist workshops are provided on a scale of one per corps for field repairs such as:
  - (1) Engineer equipment and bridging.
  - (2) Aircraft.
  - (3) Electronic equipment.
  - (4) Guided missiles and rockets.
- c. Divisional HQ LAD. This LAD is similar in organization to the brigade HQ LAD and provides unit repair and first line recovery for divisional HQ, arms and services HQ and other small units and sub-units as directed.

- d. Other LADs. LADs are provided for all other units as necessary, ie, engineer regiment, signal regiment.

### SECTION 3 - COMMAND

#### 208. GENERAL

Command of RCEME units will vary according to circumstances and to be fully understood must be detailed by type of unit and HQ. The following paragraph will indicate the position occupied in the chain of command by each RCEME unit and HQ.

209. a. Unit RCEME Tradesmen. These RCEME personnel are on the unit establishment and are under command of the unit CO for all purposes, ie, infantry battalion.
- b. LADs. The LAD commander is in effect an officer commanding a sub-unit of the parent unit and has the same status as a battery, squadron, etc commander. The LAD, like the unit RCEME tradesmen above, is under command of the parent unit CO for all purposes.
- c. Field Workshop. Major RCEME units such as field workshops and medium workshops each have a commanding officer (major). These RCEME COs have the same status as battalion and regimental commanders and their units are under the operational command of the formation commander.
- d. BEME
- (1) The BEME does not normally command any of the RCEME units in the brigade. During operations however the forward repair group and the recovery section of the field workshop and certain corps resources will be deployed periodically in the forward brigade areas and will be assigned tasks by BEME. On completion of the operation these RCEME elements will return to their parent units.

- (2) The duties of the BEME and the CREME are given in Section 10 "Duties of Officers". The BEME staff in the brigade group consists of:

- (a) BEME
- (b) Artificer - WO 2
- (c) Clerk and driver.

The transport consists of two vehicles (one with radio).

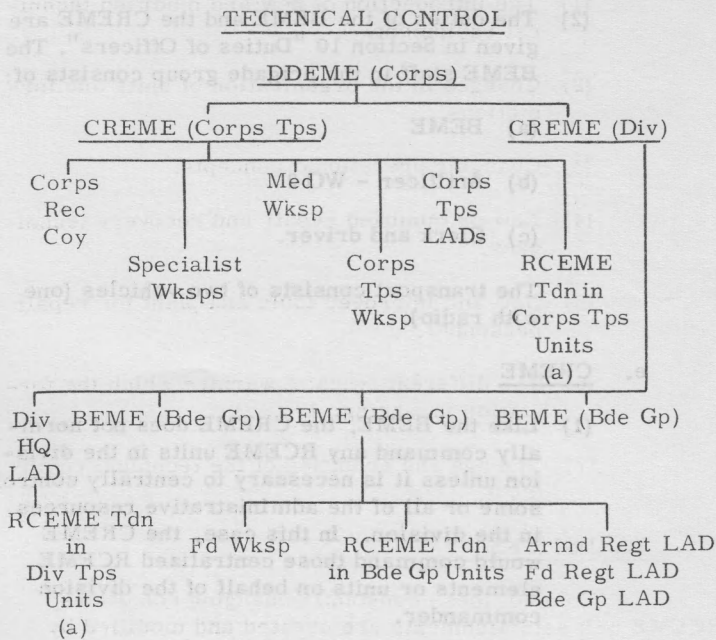
e. CREME

- (1) Like the BEME, the CREME does not normally command any RCEME units in the division unless it is necessary to centrally control some or all of the administrative resources in the division. In this case, the CREME would command those centralized RCEME elements or units on behalf of the division commander.
- (2) HQ CREME consists of:
  - (a) CREME - lieutenant-colonel
  - (b) 2IC - major
  - (c) Adjutant - captain
  - (d) Clerks and drivers

HQ CREME also has its own establishment of vehicles, trailers and office equipment.

#### SECTION 4 - TECHNICAL CONTROL

210. Each RCEME officer is responsible for the technical control of those units and personnel subordinate to him. In order to effectively exercise this control, decentralization of authority is essential. Thus each EME exercises technical control over the repair and recovery resources within his responsibility on behalf of the next senior EME in the chain of command. The chain of RCEME technical control is shown in Figure 6 on following page.

**NOTE**

- (a) Technical control and supervision over unit RCEME tradesmen is exercised through the parent unit HQ.

Figure 6

**SECTION 5 - ESTABLISHMENT PLANNING****211. GENERAL**

- a. The information detailed in Sections 1 and 2 on RCEME unit organization and establishments can be used only as a guide because of frequent changes necessitated by:

- (1) The introduction of new and modified technical equipment.
- (2) Changes in the organization of units and formations.
- (3) Changing operational concepts.
- (4) New or modified repair and recovery techniques.
- (5) New and improved tools and plant for repair personnel.
- (6) The different types of warfare which the formation is waging.
- (7) The age and condition of the technical equipment.

## 212. YARDSTICKS

To meet these constantly changing conditions, RCEME unit establishments are created and modified by means of repair yardsticks which indicate the number of tradesmen by trade required for the repair of each type of equipment in the formation or unit. The tradesmen are further allocated to the various lines of repair. These yardstick figures based on previous repair experience and current repair concepts are periodically modified for the reasons shown in para 211.

## 213. PERSONNEL REQUIREMENTS

An example of the average number of tradesmen required for the repair of wheeled vehicles and medium tanks is shown in Annex B. The electronic, instrument, weapon, recovery and administrative tradesmen have not been included.

## SECTION 6 - VEHICLES AND EQUIPMENT

### 214. REQUIREMENTS

- a. The scale of vehicles and equipment provided for workshops, LADs and unit tradesmen is designed to fulfil the following conditions:

- (1) The mobility of the RCEME component must be equal to that of the unit or formation being supported.
- (2) The vehicles, equipment and spares must be adequate for the RCEME component to carry out its role.
- (3) The RCEME component must be able to carry out the administrative activities for which it is responsible.
- (4) There must be sufficient weapons and defence stores for local defence and protection.
- (5) There must be sufficient transport to carry the authorized scales of expendable stores, materials and spares.
- (6) Sufficient stores and equipment must be provided for training both on mobilization and as a continuing requirement.

## 215. REFERENCES

- a. The types of vehicles and equipment found in RCEME units will be discussed fully in CAMT 11-3, "Command of a RCEME Field Unit". The detailed description of the various special equipment vehicles (SEVs) allocated to RCEME units will be found in the applicable EME Manual Instructions and in data summary sheets.
- b. The detailed listings of a unit's entitlement to vehicles, tools, equipment, spare parts and stores will be found in the applicable unit equipment tables and issue scales.

## SECTION 7 - GENERAL RESPONSIBILITIES AND DUTIES OF RCEME OFFICERS

### 216. GENERAL RESPONSIBILITIES

- a. The senior RCEME officer in any formation is responsible to his commander for the efficiency of the recovery and repair services in that formation. He is also the adviser to the commander

on all RCEME matters including the employment and tactical handling of all RCEME units and the standard and techniques of equipment servicing throughout the formation although the actual servicing is a unit responsibility.

- b. His other main responsibility is the technical co-ordination of all RCEME services in the formation. In this respect, he must implement the technical policy laid down by the next senior RCEME officer so that all RCEME resources are employed to conform with this higher policy.
- c. The senior RCEME officer in a formation may not necessarily be a commander (eg, CREME division, DDEME corps) but his formation commander delegates to him authority to issue instructions on technical and other matters concerning RCEME. These orders must not conflict with the requirements of the lower formation commander and his staff. Orders affecting all arms and those requiring his commander's authority are issued as part of formation orders.

## 217. DUTIES

- a. The duties of a senior RCEME officer will vary in detail but in general are as follows:

- (1) Control and Co-ordination. Responsible for the handling of the RCEME services in the formation and for co-ordination of the recovery and repair system to support the commander's plan and to achieve maximum efficiency.
- (2) Advice. Advises the commander and staff on the employment and handling of the field workshops and recovery units and advises unit commanders on the employment and handling of LADs and unit tradesmen.
- (3) Planning. Prepares the repair and recovery plan for proposed operations in conjunction with the formation staff and the EME staff of the next higher formation. During battle he remains in close touch with operations

to make any adjustments necessary especially to road clearance or recovery posts.

- (4) Inspection and Liaison. Organizes a system of regular inspection of equipment within the formation. Makes visits to lower formations and units to ensure that RCEME services are satisfactory and that the technical equipment is up to standard. Frequent visits should also be made to all RCEME units under his technical control to discuss problems with the local RCEME commander and to get to know the unit personnel.

- (5) RCEME Personnel. Provides assistance to unit commanders by general supervision of RCEME personnel in the formation including employment, technical training, promotions, postings, upgrading of tradesmen and re-allocation of reinforcements.

- (6) Stores Supply. In conjunction with RCOC he must ensure that RCEME requirements are known in good time and that the stores are available when required. He must also arrange for regular review of spares held in RCOC stores sections and make recommendations for revision of scales. In an emergency when normal channels fail he may have to authorize methods such as reclamation, local purchase through RCOC, improvisation or recommend transfer of stores between units.

- (7) Miscellaneous. Duties additional to those above are as follows:

- (a) Co-ordination of defect reports and other reports on the technical performance of equipment for onward transmission with recommendations to the next senior RCEME officer.
- (b) Ensuring that authorized modifications are carried out promptly and preparing special work programmes.

- (c) Drafting technical paragraphs for formation orders.
- (d) Distributing technical literature such as EME Instructions.
- (e) Recommending alterations to RCEME equipment tables when necessary to accommodate new equipments.
- (f) Advising on the usefulness of captured enemy or liberated civilian repair facilities and equipment.

## SECTION 8 - DUTIES OF SPECIFIC APPOINTMENTS

### 218. DDEME CORPS

- a. The DDEME Corps is responsible for the efficiency of the EME services throughout the corps and on purely EME matters, deals directly with DEME at the next higher HQ. In general his duties fall within the categories shown in para 217 but specifically he is responsible for:
  - (1) Control of certain corps units and installations.
  - (2) Advice to the corps commander and staff on the EME aspect of operational training.
  - (3) Framing EME recovery and repair policy in the corps covering such matters as development, modification and manufacture.
  - (4) Regulation of uniform standards of equipment serviceability, technical training, promotion and issue of repair standards.
  - (5) Control of the use of civilian resources allocated to RCEME.

### 219. CREME DIVISION

- a. The CREME is responsible for the implementation of the RCEME policy laid down by DDEME Corps. His general duties covered in para 217

are best accomplished by frequent visits to units and headquarters. In addition to these duties he is responsible for:

- (1) Investigating the efficiency of equipment servicing in all arms.
- (2) Noting the effect on RCEME of any changes in organization, equipment and tactics.
- (3) Collation and transmission of RCEME information about captured enemy stores and the effect of local conditions on equipment.
- (4) Exercising close personal supervision during the course of operations.
- (5) Ensuring that the maximum RCEME effort is exercised in the most economical way to support the commander's plan.

b. He is assisted in his task by a 2IC CREME and an adjutant CREME whose duties are:

(1) 2IC CREME

- (a) Understudy to CREME
- (b) Executive action on technical policy laid down by CREME.
- (c) Deals with technical reports, defect reports, equipment performance records and repair standards.
- (d) Supervision of statistics of workshop performance and output.
- (e) Preparation of technical instructions.
- (f) In conjunction with CROC recommends adjustment to scaling of RCOC stores sections and unit holdings of spares.
- (g) Assesses the condition and usefulness of captured enemy equipment.

(2) Adjutant CREME

- (a) Personal staff officer to CREME and handles all correspondence.
- (b) Deals with all details of A & Q administration not handled by RCEME unit commanders.
- (c) Deals with postings, reinforcements, training and other RCEME matters for RCEME unit tradesmen and those under direct command of CREME.
- (d) Standard of servicing of vehicles and other equipment held by HQ CREME.
- (e) Controls the issue of EME Instructions and technical library.
- (f) Coordinates technical returns and prepares technical returns to corps.

220. BEME

- a. The BEME at headquarters of brigade group has responsibilities to his brigadier exactly parallel to those of the CREME to his divisional commander. In the same way his departmental responsibility to his CREME resembles that of the latter to his DDEME at corps headquarters.
- b. One of the BEME's most important duties is liaison and only in this way intimate contact with other arms is made and maintained and their support and co-operation assured. His general duties are:
  - (1) Technical supervision of all RCEME personnel in the brigade.
  - (2) Assignment of tasks to field repair and second line recovery elements deployed forward.
  - (3) Co-ordination of repair and recovery activities in the brigade.

(4) Technical adviser to the brigade commander and staff.

(5) Co-ordination of RCEME training and technical inspections.

## 221. FIELD WORKSHOP COMMANDER

a. The duties of unit commanders generally are laid down in Queen's Regulations. The handling of a field workshop will be fully described in CAMT 11-3, Command of a RCEME Field Unit.

b. The commanding officer of a field workshop is under the command of brigade HQ to which he is responsible for the operational, technical and administrative efficiency of his unit.

c. The most important duties and responsibilities of a field workshop commander are summarized below:

### (1) Operational

(a) Ensuring a high standard of discipline, efficiency, and readiness for war.

(b) Military training of all ranks.

(c) Under direction during operations the movement, siting, defence, layout and concealment of the workshop.

### (2) Technical

(a) Organizing and controlling the unit to produce the maximum quantity of good quality work and preparing production control procedures.

(b) Training the unit in its technical role.

(c) Individual technical training and upgrading.

(d) Maintaining close liaison with all units served, to ensure that all their requirements are met.

(e) Preparing local repair standards.

(3) Administrative

(a) Responsibility for equipment, stores and regimental funds.

(b) Responsibility for health, morale and individual personnel problems.

(c) Fostering the education and military progress of potential NCOs and making recommendations for promotion.

(d) The preparation and review of all unit standing orders and instructions and standing operating procedures.

222. LAD COMMANDER

a. The LAD commander receives technical direction from the BEME, but in all other respects he is responsible to the commanding officer of his parent unit. The LAD commander is in fact a sub-unit commander and has a status similar to that of a squadron, battery or company commander.

b. The most important duties and responsibilities of the LAD commander are summarized below:

(1) Organization of Work

(a) Have a good knowledge of the role and tactical handling of the parent unit in order to provide the maximum RCME support.

(b) Ensure the operational fitness of unit equipment and that recovery and repair of equipment casualties during any phase of operations is carried out quickly and efficiently.

(c) Make his organization flexible and mobile by carefully preparing loading tables and movement drills and SOPs.

- (d) Maintain close liaison with the field workshop in order to obtain assistance to deal with any unusual or heavy repair load.

## (2) Supervision of Personnel

- (a) Make arrangements for the military, technical and educational training of the LAD personnel.
- (b) Make selection of potential NCOs and recommend promotions.
- (c) Maintain a high standard of morale through attention to discipline, living and working conditions, recreation and individual personal problems.

## (3) Maintaining Unit Stores and Equipment

- (a) Act as technical adviser to his commanding officer on everything affecting the servicing and condition of unit equipment.
- (b) Organize periodic technical inspections.
- (c) Supervise the progress of modifications.
- (d) Initiate defect reports.
- (e) Bring to the notice of the commanding officer any instances of neglect or misuse of equipment and conduct educational programmes to correct any deficiencies.
- (f) Ensure that the condition of his LAD vehicles and equipment set an example of good servicing to the rest of the parent unit.
- (g) Take a personal interest in the holdings of tools and spares and initiate any necessary recommendations for revision of the scales.

223. DIVISION OF RESPONSIBILITY

a. Within some major units, the responsibility for the condition of unit equipment is shared by the OC LAD, the unit technical adjutant and the QM. The detailed division of responsibility must be decided by the unit CO but in general the following is a recommended working arrangement:

(1) Technical Adjutant

- (a) Acts as CO's adjutant in all technical matters.
- (b) Issues technical directives and policy on the CO's orders.
- (c) Supervises unit servicing.
- (d) Investigates the performance of vehicles and equipment from the user's point of view.
- (e) Supervises documentation, vehicle and mileage returns and modification states and prepares returns.

(2) QM

- (a) Indents, draws from RCOG and issues and returns all vehicles, kits and unit spares.
- (b) Draws and issues POL.

(3) OC LAD

- (a) Recovery and repair of all unit vehicle and technical equipment.
- (b) Holds and accounts for all unit mechanical tools and spares.
- (c) Liaison with BEME and field workshop.
- (d) Preparation and submission of defect reports.

(4) Technical Adjutant and OC LAD - Jointly

- (a) Technical advice to the CO. The CO will normally appoint one of them for this function.
- (b) Unit vehicle inspections. The technical adjutant arranges and the OC LAD carries them out.
- (c) Liaison between technical authorities, the CC, and squadron commanders on all technical matters.

## CHAPTER 3

### RECOVERY

#### SECTION 1 - THE RECOVERY SYSTEM

##### 301. GENERAL

- a. Recovery covers the initial extrication of equipment casualties, removal to repair sites, conveyance between RCEME units and installations, and backloading to RCOC returned vehicle parks and backloading points.
- b. The process of recovery goes on continuously throughout the operation and the system must therefore be flexible. For maximum efficiency the system depends upon:
  - (1) Coordination at the highest level.
  - (2) Rapid passage of information and orders.
  - (3) High standard of communications.

##### 302. THE RECOVERY SYSTEM

- a. The basic recovery system is organized in four stages as follows:
  - (1) First Line Recovery. Covers the extrication of an equipment from the place where it became a casualty and its removal to a unit area, LAD site or equipment collecting point (ECP). This is carried out by unit and LAD recovery resources.
  - (2) Second Line Recovery. Covers the backloading of equipments from the location to which they were conveyed by first line recovery, to the field workshop or brigade backloading point (BLP). This is carried out by the recovery platoon of the field workshop.
  - (3) Third Line Recovery. Covers the backloading of equipments from the location to which they were conveyed by second line recovery to the medium workshop or corps BLP.

It also includes movement between the medium workshop and corps BLP. This is carried out by the corps recovery company.

- (4) Fourth Line Recovery. Covers the back-loading of equipments from corps or army BLP, medium workshop or RCOC returned vehicle park to the base railhead or road-head. This is carried out by the army recovery company.
- b. The basic system outlined above is extremely flexible since field workshop and corps recovery resources are frequently required in the forward areas to augment unit and LAD facilities. In addition, during battle all recovery resources are often required for such tasks as:
  - (1) Clearance of routes and defiles.
  - (2) Provision of recovery posts and patrols.
  - (3) Battlefield clearance.
  - (4) Major obstacle crossings.
- c. The tactical deployment of the recovery resources is detailed in Chapter 5 "Tactical Handling". The organization and stages of recovery are illustrated in Plate 1.

## SECTION 2 - FACTORS AFFECTING RECOVERY

### 303. GENERAL

Efficient recovery depends upon getting the right equipment to the right place with a minimum of delay and movement. The main factors upon which success depends are shown below.

### 304. FACTORS

#### a. Information

- (1) Information on which to base the recovery plan includes:

- (a) The operational plan.
  - (b) Future intentions especially moves.
  - (c) Topography (eg, defiles, crossings and minefields).
  - (d) Condition and availability of routes.
- (2) Information of equipment casualties in order to implement the plan. The reporting of casualties, a unit responsibility, is done verbally, by radio or by message on a standard form. Information to be included if units expect prompt assistance is as follows:
- (a) Unit.
  - (b) Location of casualty (by grid reference).
  - (c) Make and type of equipment.
  - (d) CAR number.
  - (e) Classification if known (X, Y, Z or BR).
  - (f) Assessment of damage or cause of breakdown and assistance required.
  - (g) Whether crew is with the equipment.
  - (h) Local tactical situation including mines.
  - (i) Nature of the ground in the vicinity.
- b. Priorities. The normal RCEME policy is to recover or backload first the equipments required most urgently operationally or most easily repairable. Any changes made by the staff for tactical reasons must be notified in RCEME operational instructions. All major movement of recovery vehicles must have prior staff approval and recovery crews must avoid blocking routes.

c. Restrictions. The movement of recovery vehicles and transporters, due to their characteristics of size and speed, may be limited in their backloading tasks to certain times or routes. Backloading restrictions inevitably result in more repair in situ, cannibalization or sentencing BLR. Recovery restrictions are detailed in orders in the following terms:

(1) Route clearance only - (casualties moved clear of the route only.)

from \_\_\_\_\_ to \_\_\_\_\_

(2) Limited recovery - (casualties are concentrated at recovery posts and ECPs during certain hours.)

from \_\_\_\_\_ to \_\_\_\_\_

or effective \_\_\_\_\_

(3) Crock time - (casualties are backloaded from recovery posts and ECPs to BLPs and workshops during certain hours.)

from \_\_\_\_\_ to \_\_\_\_\_

(4) Further restrictions include direction of movement of casualties, recovery times, and recovery boundaries.

d. Vulnerability and Protection. The decision whether or not to recover must be made quickly since the condition of equipment rapidly deteriorates if left unattended. When it is necessary to recover under fire, the protection of the detachment must be considered due to the scarcity, expense and vulnerability of recovery vehicles.

e. Location of ECPs, BLPs and Workshops. Recovery and backloading aim at getting the casualty to the workshop with the minimum of movement. With this aim in view, ECPs should be established as far forward as possible and BLPs at a workshop location or at a future workshop site.

- f. Use of RCASC Transporters. Their primary role is tactical but when not so employed they may be allotted for backloading equipment casualties. They form a valuable addition to RCEME facilities and maximum use should be made of them by coordination with the staff.

g. Non-tactical factors

- (1) Man management. Since some recovery crews must be always in immediate readiness, a system of rotation of duties is essential to allow detachments time for rest.
- (2) Care of Equipment. Regular periods must be allotted for servicing and repair of the equipment with particular attention paid to the various pieces of recovery equipment.
- (3) Maps. Recovery vehicles must have a set of maps of the area, and the crews must be well trained in map using.
- (4) Fuel, Rations and Cooking. Recovery vehicles must always start out with a full supply of rations, POL, and cooking equipment together with a reserve for assisting stranded vehicle crews.
- (5) Exchange of Information. Recovery crews should call at any recovery post, ECP or recovery control that they pass in order to exchange any useful recovery information or to receive instructions.
- (6) Records. Recovery detachments must keep a suitable record of all recovery tasks and details of casualties beyond their capacity. The record should contain the following information:
  - (a) Date and time reported.
  - (b) Unit and CAR No.
  - (c) Description of equipment.

- (d) Recovered from (GR).
- (e) Recovered to (GR).
- (f) Details of type of casualty (X, Y, Z, BR etc).

(g) Time completed or method of disposal if recovery not carried out.

(7) Mines. Recovery crews must be trained in mine location and clearing. When a casualty is in a mined area they must be provided with mine detectors.

(8) Burial of Dead. When unit representatives are not available, recovery crews are responsible for removal of dead crews from vehicles, burial, marking the grave and disposing of the effects.

(9) Making Weapons Safe. Rounds must be removed from guns, machine guns, mortars and dischargers to prevent accidents.

### SECTION 3 - RECOVERY PLANNING

#### 305. GENERAL

- a. The broad recovery policy is laid down by the staff on the advice of RCEME and is included in formation operation or administrative orders.
- b. The detailed RCEME plan for a specific operation is made by the RCEME adviser at the HQ directing the operation. Points which must be considered before making the plan are:

- (1) General staff policy.
- (2) Directive from the next senior RCEME officer.
- (3) Latest information on operations.
- (4) Staff estimate of equipment casualties.

- (5) Changes in normal priorities.
- (6) Resources and routes available.
- c. Based on the plan, RCEME orders are sent out in amplification of those issued by the staff and usually include:
  - (1) Responsibility for recovery over the whole area of operations.
  - (2) Changes from or additions to the normal system of recovery and the normal allocation of resources.
  - (3) Locations and projected moves of RCEME units and installations.
  - (4) Method of control and intercommunication.
  - (5) Priorities for recovery and backloading.
  - (6) Special instructions such as use of roads, destruction of equipment.
  - (7) Establishment of BLPs, recovery posts, road patrols etc.
- d. During the operation, continual adjustment to the RCEME plan will be necessary to conform with the progress of the battle. Moves of formations and units and changes in conditions affecting recovery such as roads available, security of areas, and priorities will all affect the plan. The rapid passage of new orders and instructions vitally depends on the efficiency of RCEME communications.

#### SECTION 4 - CONTROL OF RECOVERY

##### 306. CONTROL OF RESOURCES

Under relatively quiet conditions the normal recovery system is adequate for requirements and control of recovery resources remains at unit level. During offensive and withdrawal operations, however, greater flexibility is necessary and some or all of the recovery resources in

brigades and corps will normally be pooled under CREME or BEME. A recovery control organization is then established.

### 307. RECOVERY CONTROL

- a. Location. When a recovery control organization is formed, it is usually established near the formation axis and as close to the main formation HQ as possible. It must also be on a main signal route and within easy communication of the senior EME of the lower formation. The CREME or BEME may be located at the recovery control during operations.
- b. Control. The location and responsibility of recovery control will vary with the nature of the formation (corps, div or bde) and the type of operation. Regardless of the formation, a recovery control officer is normally appointed from a field workshop or from the corps recovery company. The task of this officer will vary, but in general his responsibilities are:
  - (1) Control of the recovery resources allocated to support the formation except those attached to lower formations or units.
  - (2) Arranging for the backloading of all casualties within the limits of his responsibilities, ie,
    - (a) Brigade control - Y1 Casualties from unit, LAD or ECP to field workshop or BLP.
    - (b) Divisional control - Y2 Casualties from field workshop or BLP to medium workshop or corps BLP in conjunction with corps recovery.
  - (3) Provision of up-to-date information on the recovery and backloading situation.

(4) Submitting reports and states as required by RCEME and formation staff.

(5) Prompt reporting to HQ RCEME details of casualties which cannot be handled and of assistance required.

(6) Establishment of ECPs, recovery posts, patrols and BLPs and notification of these locations to all concerned.

c. Records. The information and records normally kept by recovery control are as follows:

(1) Battle map showing locations of casualties, UP and DOWN routes, traffic posts, detours etc.

(2) Location board showing locations of HQ, RCEME units and sub units, OFP, medical posts, and RCASC sup Ps, PPs and APs.

(3) Battle board showing distribution and details of tasks of recovery resources.

(4) Log and message board.

(5) Recovery task record containing complete information on each casualty reported. The recovery detachments maintain a similar record (para 304 g (6)).

d. Communications. Good communications are vital if the recovery organization is to function effectively and the requirements are as follows:

(1) A formation forward repair and recovery radio net providing contact with HQ RCEME, workshops, other formation recovery control HQ and each recovery team. The formation administrative net is not normally available due to the large volume of routine administrative traffic.

(2) If possible, line communications should be provided to the switchboard at main formation HQ to maintain close touch with HQ RCEME and other recovery controls.

- (3) DRs must be available at all times at control HQ should all other means of communication fail.
- (4) When a recovery net is unavailable, arrangements should be made to use the traffic control net.

### 308. FORMATION BACKLOADING POINT

a. The brigade or divisional BLP is the main point of junction between second and third line recovery resources. It is established to keep to a minimum the number of casualties accumulating in the field workshops for backloading to higher repair facilities.

b. Siting. The BLP is normally sited adjacent to but physically separate from a field workshop and near the formation main DOWN route. During fluid operations when it may be established well forward of the workshops, assistance will be required from corps for backloading. The site requirements are as follows:

- (1) Adequate space for casualties and turning transporters.
- (2) Class 80 access to a class 80 route.
- (3) Firm ground and good concealment.

c. Composition and Tasks. One of the field workshops is normally responsible for providing the personnel to administer and guard the BLP. The BLP party consists of a senior NCO, guards and a recovery vehicle. It is a suitable task to allot to the recovery platoon. The tasks of the party are to:

- (1) Sign the approaches to the BLP.
- (2) Guard the casualties.
- (3) Classify casualties as necessary by mark-in white paint on the windshield the appropriate classification (Y1, Y2, Z or BR).

- (4) Keep the formation recovery officer informed regularly of any expected backloading tasks.
- (5) Notify the workshop of the detail of repairable casualties received and transport these to the workshop as requested.
- (6) Carry out limited reclamation.

### 309. EQUIPMENT COLLECTING POINTS

- a. One or more ECPs are established to permit the concentration of equipment casualties requiring field repair and are the main junction points between first and second line recovery resources.
- b. Siting. ECPs are located as far forward as possible in the general vicinity of the brigade A echelon areas and near suitable DOWN routes. These are much smaller in size than BLPs and thus do not have such stringent site requirements.
- c. Composition and Tasks. ECPs require only a RCEME NCO from the field workshop and a few personnel for guarding duties. Casualties are not classified at the ECP since it serves as a concentration point only.

## SECTION 5 - SPECIAL RECOVERY TASKS

### 310. AIRCRAFT

Aircraft casualties which can be reached by road are recovered by land transport if possible. When the aircraft has crashed in an inaccessible location, recovery will be carried out by a transport helicopter under RCEME arrangements.

### 311. ROUTE CLEARANCE

- a. The normal organization for route clearance is to establish recovery posts at main road junctions, intersections, bridges and other potential bottlenecks. Recovery posts are usually manned by a minimum of one NCO and two men with a recovery vehicle.

b. During a major move recovery vehicles will also be required for duty at traffic control posts. Once detailed for a particular post, a vehicle must not be diverted to other duty without authority of TC HQ.

c. Initial recovery will be limited to clearing the route. During a lull in movement, casualties may be moved to collecting points. At the conclusion of the move, or on abandoning the site, a list of vehicles requiring backloading, or which have been destroyed during a withdrawal, will be sent to the formation or unit responsible for traffic control.

### 312. UNIT MOVES

a. Units on the move are responsible for the recovery of their own vehicle casualties. They will be towed by another unit vehicle either to the new location or to the next traffic post and handed over for repair or backloading according to the formation recovery plan. In a withdrawal, all casualties should be towed by the unit as far to the rear as possible.

b. Recovery vehicles held by the LAD of a major unit are normally allotted to sub-units during a move and travel at the rear of a column or group.

### 313. DEMOLITION GUARDS AND BRIDGING AND FORDING SITES

a. The allocation of recovery vehicles to demolition guards and bridging and fording sites is made by the senior EME and the vehicles and personnel are placed under command of the guard or site commander. Their initial orders will include:

(1) The recovery task.

(2) The unit or sub-unit to which they will report.

(3) Details of the period when they will remain under command.

- (4) Instructions for rejoining their parent unit.
- (5) Brief outline of the operational plan.
- (6) Adm details including POL, rations and ammo.

#### 314. BATTLEFIELD RECOVERY

- a. During a lull in battle it may be possible to organize substantial recovery operations. Within units, the OC LAD may send forward one or more of his HQ LAD recovery vehicles to assist the sub-units and at the same time may ask the BEME for additional resources if required.
- b. The BEME coordinates recovery sections and the forward repair teams in the brigade group area under direction from CREME on whom he calls for any additional assistance required. Equipment casualties recovered from the battlefield in this way are backloaded as usual through brigade ECPs to a field workshop or to the BLP.
- c. Battlefield recovery must not be confused with battlefield clearance, which is the recovery of derelict equipment at a later stage, usually under corps arrangements.

#### 315. NBCW DECONTAMINATION

Recovery crews must be provided with emergency decontamination equipment to render an equipment safe prior to extrication. Decontamination of equipment requiring first line recovery and/or unit repair is a unit responsibility. If the equipment requires second line recovery, and/or repair beyond unit capability, initial decontamination will be carried out by the recovery crew followed by complete decontamination prior to repair being effected.

CHAPTER 4REPAIRSECTION 1 - THE REPAIR SYSTEM401. GENERAL

- a. The various RCME units must possess the men, equipment and spares required for the type of repairs which they are to undertake. They must be as mobile as the unit or formation being served. This mobility will allow them to move as close as practicable to equipment needing repair thus reducing the backloading problem. On the other hand this sets a limit to the type of repair that a RCME unit can undertake.
- b. The repair system must be flexible and if necessary LADs and workshops can undertake work outside their normal scope, to the limits of time, tools, personnel and spares available.

402. STAGES OF REPAIR

- a. The basic repair system is divided into three stages according to the amount or type of work involved as follows:
  - (1) Unit Repairs. This is the initial stage of repair carried out in unit areas by unit tradesmen and LADs servicing units and is limited to adjustments, minor repairs, replacement of accessible components and minor assemblies and welding repairs which:
    - (a) Can be completed within a time limit imposed for operational reasons.
    - (b) Are within the resources of personnel and equipment provided.
    - (c) Are authorized by the PRS for the equipment concerned.

(2) Field Repairs. This is the second stage of repair carried out in formation areas by field and medium workshops and is limited to the replacement of defective assemblies, general repairs, and to the repair of certain assemblies and components which:

- (a) Can be completed within a time limit imposed for operational or economic reasons.
- (b) Are within the resources of personnel and equipment provided.
- (c) Are within the PRS.
- (d) In the case where repair of assemblies and components are quicker because of the unavailability of replacements.

(e) Are beyond the scope of unit tradesmen and LADs.

(3) Base Repairs. This is the third and last stage of repair carried out in theatre by advanced base and base workshops and includes:

- (a) Repair of defective components.
- (b) Rebuild of assemblies.
- (c) Overhaul and rebuild of complete equipments.
- (d) Limited manufacture of parts.

b. This division of repair into stages is necessary to:

- (1) Permit repairs to be carried out as far forward as possible thus reducing the time an equipment is out of action.
- (2) Minimize backloading and consequent deterioration.

- (3) Reduce the numerical requirement of repair tools, equipment and maintenance stocks of replacement equipments.
- (4) Reduce the variety of work carried out in any one RCEME component.
- (5) Permit economical employment of the limited numbers and types of skilled personnel available.
- (6) Simplify the holding and recording of spare parts.

#### 403. LINES OF RCEME SUPPORT

- a. For convenience RCEME units are classified into lines according to their position in the repair organization as shown in Fig 7 below:

	Type of Casualty	Stage of Repair	RCEME Component	Remarks
First	X	Unit	Unit Tradesmen and LADs	Establishments depend on amount of technical equipment in unit.
Second	Y1	Field	Field Workshops Corps Troops Workshop Specialist Workshops	Are brigade group units. Is a corps unit. Are corps or army units and carry out all field repairs to particular types of equipment, ie, missiles, aircraft.

	Type of Casualty	Stage of Repair	RCEME Component	Remarks
Third	Y2	Field	Medium Workshop	Is a corps unit and carries out heavier field repair back-loaded from second line units to prevent overloading or because of the time factor.
Fourth	Z	Base	Advanced Base Workshop and Base Workshop	Are army, army group and theatre units and not included in the Canadian order of battle. This function will be carried out by the army providing base support.

Figure 7

- b. Full details on the organization and role of each type of RCEME unit will be found in Chapter 2 "Organization". An explanation of the terms used is contained in Annex A "Glossary of Terms". The stages of repair in the field are illustrated in Plate 2.

## SECTION 2 - FACTORS AFFECTING REPAIR

### 404. GENERAL

- a. The tactical handling of LADs and workshops in the different phases of battle is covered in Chapter 5 "Tactical Handling".
- b. Many of the factors affecting repair are also applicable to recovery operations and are covered fully in Chapter 3, "Recovery". The following factors, however, are particularly important in affecting repair.

### 405. FACTORS

- a. Information. Two types of information are essential as follows:
  - (1) Information affecting the likely repair load on which plans can be made and stores demands based.
  - (2) Earliest possible warning of moves so that arrangements can be made for the completion of work in hand and the re-routing of equipment casualties.
- b. Priorities. Under quiet conditions, repairs are normally dealt with in the order received. However, the value or scarcity of an equipment may lead to its repair being given priority over other work. Priorities are laid down by the staff in consultation with RCEME advisers. The normal policy, in order to get the maximum number of equipments back into use quickly, is to give priority to repairs that can be completed in the shortest time.
- c. Siting. The productive capability of the workshop or LAD depends to a degree on its siting. In general the prerequisites of a good site are:
  - (1) Conveniently situated to the units being served.

- (2) Protection from enemy action.
- (3) Good communications with the controlling HQ.
- (4) In winter especially, good road access, hard standing and adequate shelter.

d. Movement. The planning and organization of a move is of first importance since repair work ceases whenever a RCEME unit moves. Workshops, although on short notice before a move should not be held closed or "on wheels" longer than necessary. In order to minimize backloading, a field workshop will often move to a previously established ECP or BLP and a medium workshop may take over the site vacated by a field workshop that has moved forward leaving unfinished work behind.

e. Control and Co-ordination. Depending on circumstances, workshops may be under command of CREME, or the unit or formation commander. Technical control of all workshops in the formation, however, is exercised by the formation senior EME who will co-ordinate movement and distribution of repair loads through staff channels if appropriate.

f. Forward Repair Group. Although the field workshop is organized to provide a forward repair group for field repairs in the forward area, the overall output of the workshop is adversely affected when the group is deployed. In addition when tradesmen from the weapons and wireless platoon are required to augment forward repair, the workshop capacity is further diminished.

g. Stores Supply. Stores supply and repair are so closely interlocked that an even flow and an adequate supply of spare parts is often the most important factor in the rapid completion of repairs. This matter is dealt with in Chapter 8, "Stores Supply".

h. Vehicle Crews. The crews of "A" vehicles and the drivers of "B" vehicles and gun crews usually accompany their equipments into the workshop where they can perform servicing and assist with the repairs. On completion of the repair work, "A" vehicles are normally taken to the forward delivery squadron and "B" vehicles and guns to the unit.

i. Removal of Dead. Dead crews are normally removed from a vehicle before it arrives in the workshop, but this may not always be possible especially with badly damaged AFVs. Workshop personnel must therefore remove the bodies and decontaminate the vehicle before repair work can commence. Decontamination resulting from nuclear radiation, gas or bacteriological agents must also be removed in accordance with formation orders.

j. Removal of Ammunition. Ammunition is usually simple to remove and must be stored at a safe distance from vehicles and personnel. However, if the ammunition is damaged by enemy action or fire, RCOC technical advice must be sought before repairs to the vehicle can commence.

k. Vehicle Kits. When a vehicle is accompanied into the workshop by the driver or crew, they are responsible for the vehicle kits. When the vehicle is unaccompanied, the workshop is responsible for the removal and custody of all attractive and easily removable items prior to repairing the vehicle.

l. NBCW Decontamination. Decontamination of serviceable equipment is a unit responsibility. Equipment casualties requiring repair beyond unit capability must be decontaminated by workshop personnel before repair can commence.

### SECTION 3 - REPAIR PROCEDURE

#### 406. GENERAL

Procedures vary slightly for the different classes of repaired technical equipment due to their inherent

characteristics and role. The various differences are shown below. Repair procedures within LADs and workshops will be discussed in detail in CAMT 11-3, "Command of a RCEME Field Unit".

#### 407. PROCEDURE

##### a. Vehicles and Artillery

- (1) Equipment casualties requiring field repair and the overflow from LADs are backloaded to field workshops or repaired in situ by forward repair teams. The normal yardstick for defining field repair is found in PRSs which are based on time, tools and stores required.
- (2) Within the limits imposed, a field workshop undertakes the maximum number of repairs possible in order to obviate the necessity of backloading casualties to the medium workshop and striking them off unit charge.

##### b. Weapons

- (1) Most units with LADs have weapons technicians on strength and units without an LAD such as an infantry battalion have a RCEME weapons technician on establishment. These weapon technicians carry out all unit repairs, modifications and zeroing of weapons.
- (2) Weapons requiring field repairs are backloaded by the unit to a field workshop and collected again after repair. Field workshops dispose of weapons that they cannot repair through RCOC channels and a condemnation certificate is sent to the unit and to HQ RCOC.

- c. Instruments. Instrument technicians are not found further forward than field workshops. Instruments held by units are inspected regularly by LADs or by inspectors detailed by the senior EME. Equipment requiring repair is then backloaded to the field workshop.

#### d. Electronic Equipment

- (1) Due to the many types of electronic equipment such as radio and radar, the division of responsibility for unit repair is somewhat complicated. However, generally speaking RC Sigs personnel carry out unit repairs to radio equipment and RCEME carry out unit repairs to the other types of electronic equipment. All equipment requiring field repair is either backloaded to the field workshop or repaired by RCEME repair teams.
- (2) The main RCEME effort is concentrated on making regular visits to units to adjust and repair their equipment in situ. As described in Chapter 7, "Inspections", an inspection program is arranged by the senior EME and visiting teams from the field workshop using radio repair trucks, test, calibrate and carry out a wide range of repairs to all types of electronic equipment.

#### e. Aircraft

- (1) Servicing and unit repair to all aircraft and associated technical equipment is carried out by unit tradesmen and by LADs. Exceptions to this rule are aircraft which:
  - (a) Have been backloaded out of the unit area.
  - (b) Have been repaired in situ by aircraft repair teams from the field workshop.
- (2) The field workshop is responsible for all field repairs to the aircraft of the formation.

#### f. Missile System

- (1) Servicing, pre-firing checks and major chassis replacement will be carried out in

the missile assembly area by combined teams of unit and LAD personnel.

- (2) Repairs to unserviceable missile systems less explosive components beyond the capability of the LAD will be carried out by field workshop personnel. RCOC will provide personnel to assist in repair of explosive components. Chassis and sub-assemblies will also be repaired by the field workshop.
- (3) Missile systems less explosive components which cannot be repaired by unit or workshop personnel will be backloaded. RCOC is responsible for the inspection and repair of explosive components at all levels.

g. Engineer Equipment. Unit repairs to heavy engineer equipment in field squadrons is the responsibility of the RCE. Field repairs to engineer equipment are carried out by the field workshop as for vehicles and artillery.

h. Radiac Equipment. Servicing and repair of radiac test equipment and unit and field repairs to radiac instruments will be carried out by LAD or field workshop personnel.

## CHAPTER 5

### DEPLOYMENT AND TACTICAL HANDLING

#### SECTION 1 - GENERAL

##### 501. THE ECHELON SYSTEM

- a. Units in the brigade group are normally divided into echelons to:
  - (1) Assist the commander in the exercise of command.
  - (2) Distribute the functions of battle to their proper position on the battlefield.
  - (3) Permit each component of the brigade group to perform its particular function effectively.
- b. The composition of the different echelons will vary from operation to operation but in general they are:
  - (1) F Echelon. Contains the equipment and personnel needed for the actual conduct and control of the battle.
  - (2) A Echelon. Contains the equipment and personnel needed for the immediate repair support and maintenance of F Echelon. A Echelon in armoured units is divided into A1 and A2 Echelon.
  - (3) B Echelon. Contains the equipment and personnel required for the routine administrative support of the units. It is normally located in the brigade group logistic area.

##### 502. DEPLOYMENT

- a. RCEME resources are deployed during operations to provide repair support as far forward as possible for all echelons. The areas selected will vary in distance from the forward troops

during any one phase because of the following main considerations:

- (1) Enemy interference.
- (2) Time available to effect repairs.
- (3) Restrictions on number of vehicles allowed in forward areas.

b. The squadron or battery sections of LADs will operate in F echelon with the remainder of the LAD normally near A echelon. The primary role of the LAD during operations is to give immediate recovery and repair support to F echelon.

c. Except in the defence, the recovery resources and the mobile repair teams are deployed well forward. The greatest problems will inevitably be route clearance and emergency unit and field repairs.

#### 503. SOURCES OF INFORMATION FOR THE RCEME PLAN

a. The possible sources of information are:

- (1) Formation 0 groups and conferences.
- (2) Senior Q staff officers at rear HQ.
- (3) Visits to the operations room at main HQ.
- (4) Personal recce and visits to formations and units.
- (5) Recovery control.
- (6) DDEME corps.

#### 504. THE RCEME PLAN

a. Timing. The RCEME plan begins to take shape as soon as the commander's intention is known but the final appreciation and plan must wait until the formation commander gives his orders.

b. Factors. The main factors which must be considered in making any RCEME plan are:

- (1) Ground. Including routes, obstacles, demolitions, minefields and terrain.
  - (2) Enemy. Including defences, strengths, intentions and capabilities both ground and air.
  - (3) Time and Weather. Complete meteorological information necessary.
  - (4) Tactical Plan. The complete formation tactical plan must be known.
  - (5) Priorities. Repair, recovery and backloading.
  - (6) Restrictions. Movement of technical vehicles and administrative units.
  - (7) Equipment. Condition of formations equipment, casualties and backlog of repair and recovery work from previous action.
  - (8) Communications. Availability and reliability.
  - (9) RCEME Resources. Availability and tasks of RCEME units allocated from corps.
  - (10) Local Resources. Availability of local civilian and captured enemy equipment and installations.
- c. Prerequisites. The prerequisites of the RCEME plan for any operation are:
- (1) Provision of appropriate support for all units in the formation.
  - (2) Conformity to the overall policy and intentions of DDEME.
  - (3) Simplicity and flexibility to provide support for each phase of the battle with as little re-deployment of RCEME resources as possible.
  - (4) Economy to ensure that effort is not wasted needlessly and that normal operating procedures can be followed for as long as possible.

## 505. WARNING ORDERS

- a. Warning orders are essential to reduce the disruption of work caused by sudden moves and should include:
  - (1) Date and estimated time of move.
  - (2) Destination.
  - (3) Method of move (ie order of march etc).
  - (4) Time before which no move will take place, other than recce.
  - (5) RV and time for recce parties.
  - (6) Limitations on size of recce parties.
  - (7) Expected time of issue of final movement order, or time for unit representative to report for orders.
  - (8) Instructions for disposal of vehicles and equipment under repair or awaiting disposal.

## 506. VERBAL AND WRITTEN ORDERS

- a. There is seldom any need for formal written orders once the RCEME units and RCEME HQ have settled into field routine. In a fast moving battle there is seldom time for written orders except for a particularly important or complicated operation.
- b. Comprehensive formation and unit standing orders (Chapter 9) supplemented by verbal orders issued at an 0 group are normally sufficient. When written orders are dispensed with, the following must be born in mind:
  - (1) All officers and senior other ranks must be trained to issue verbal orders and to act on them.

- (2) Verbal orders must be given in the standard sequence of written orders.
- (3) Accurate logs, including the list of all orders and instructions must be kept by HQ RCEME, by RCEME units, and at RCEME radio stations.
- (4) The BEME and CREME must keep their own HQ fully informed of any orders or instructions issued by them personally, other than at 0 groups.

#### 507. TACTICAL HANDLING

- a. Efficient planning and clear, concise, timely orders will ensure good control and co-ordination of the RCEME resources especially detachments and teams deployed over a wide area. The following sections detail the deployment of the RCEME resources in each phase of war:
  - (1) The Defence. Including the preparatory stage, the enemy assault and the counter attack.
  - (2) The Offence. Including the advance to contact, the attack and the exploitation.
  - (3) The Withdrawal.

### SECTION 2 - THE DEFENCE

#### 508. THE AIM

The aim of all defensive operations is the destruction of attacking enemy formations as a prelude to mounting the offensive. The aim of RCEME in the defence is to return to a battleworthy state the maximum amount of equipment in the least possible time.

## 509. THE PREPARATORY STAGE

- a. During this stage while the enemy is closing up to the obstacle, work is continuing to complete and improve the defences, RCEME will operate as follows:

(1) LADs. LADs will be sited by their parent units or formations and should be located for maximum output, ie, good working conditions, close to their workload. They will normally be near A echelon to take advantage of the parent unit's defence scheme. LADs may have all or some of the following tasks:

- (a) Unit repairs in situ or at LAD sites.
- (b) Limited field repairs to relieve pressure on workshops.
- (c) Route clearance in unit areas.
- (d) Recovery and backloading of casualties to LAD or ECP.
- (e) Limited inspection of unit equipment.

### (2) Field Workshops

(a) Siting. Field workshops will be sited in the brigade group administrative area to obtain the best working conditions, protection and maximum output subject to the defence requirements.

If more than one area is formed, the workshop will be split.

(b) Repair Teams. Repair teams composed of vehicle, electronic and weapons tradesmen will be despatched forward to carry out priority field repairs especially to equipment which cannot be backloaded.

## 508. THE PREPARATORY STAGE

- (3) Recovery and Backloading. During this stage the recovery platoon will likely remain under control of the field workshop since the recovery commitment should be small. Backloading from LAD or ECP to the field workshop will be normal. Recovery posts may be required on the main brigade group routes.
- (4) Inspections. It may be possible to carry out a limited inspection program of unit equipment to assess its fitness for battle and to forecast future stores requirements.

510. THE ASSAULT STAGE

- a. During this stage, the enemy after driving in our covering troops and screen will launch more closely co-ordinated attacks. RCEME will operate as follows:

- (1) LADs. Work will continue normally in the same location.
- (2) Field Workshop. The field workshop will likely remain in the same location. The forward repair group will likely be withdrawn from the forward area to minimize movement, and to increase the output of the workshop.
- (3) Recovery and Backloading. The recovery plan must be carefully co-ordinated as there is now a requirement for second line recovery in the forward zone to support the troops engaged in the defence battle. BEME must decide at what juncture it is necessary to centralize control of the brigade group recovery resources to support the subsequent stage of offensive action.

- (4) Control. Recovery, backloading and the "G" plan for repair priorities must be watched by the BEME and resources adjusted accordingly. CREME must be informed of the repair and recovery load and of any special problems arising.

#### 511. THE COUNTER-ATTACK STAGE

- a. This is the stage where the enemy has succeeded in gaining a foothold and the situation has been stabilized pending the counter-attack in support of nuclear weapons.
- b. In the counter-attack stage within the brigade group RCEME will operate as in the assault stage. However, should the brigade group be employed in the containment role RCEME will operate as follows:
  - (1) LADs. Emergency unit repairs only will be carried out and equipment requiring more extensive unit repairs will be backloaded.
  - (2) Field Workshop. Priorities and limitations will be placed on the field repairs in preparation for the move forward.
  - (3) Recovery and Backloading.
    - (a) Recovery resources of the brigade groups will be controlled by CREME and a recovery control HQ will be established.
    - (b) Brigade group ECPs and a BLP may be required because of excessive casualties and the impending move of one or more brigade groups.
    - (c) DDEME corps must be fully informed of recovery requirements including the possible necessity of forming a corps BLP.

### SECTION 3 - THE OFFENCE

#### 512. AIM

The aim of all offensive operations is the destruction of the enemy's forces and the imposition of the commander's will on the enemy. The aim of RCEME in the offence is to ensure that the greatest number of vehicles and equipment is maintained during each stage of the offence and to keep the routes clear.

#### 513. ADVANCE TO CONTACT

During this phase troops are placed in a position to engage the enemy and it normally occurs in the opening stages of a campaign or in the follow-up of a withdrawing enemy.

#### 514. BEME'S PROBLEM IN THE ADVANCE TO CONTACT

a. BEME's problem will consist of:

- (1) Recovery. Route clearance for the advance guard and the main body and movement of crocks to the best location for early repair, ie, to ECPs and return to owning units.
- (2) Repair. Movement and siting of the workshop close to the fighting troops to provide continuous field repair facilities. Movement of the workshops can be reduced greatly by moving the repair teams of the forward repair group well forward in the initial stages. Adequate forward and lateral roads are of the greatest assistance to this process.

#### 515. ROLE OF RCEME UNITS IN THE ADVANCE TO CONTACT

- a. LADs. These will normally move with A echelons and be responsible for:
- (1) Route clearance.

(2) Light unit repairs (running repairs only).

(3) Recovery and forward loading of all casualties that are repairable on arrival at destination.

(4) Passing information on casualties left behind to the BEME or CREME.

b. Field Workshop. The field workshop will move forward with the other administrative elements provided the distance of the advance warrants movement. It will normally be sited at an ECP previously formed forward and will remain static long enough to carry out useful work. The workshop is responsible for:

(1) Repair of casualties in situ or at workshop sites.

(2) Provision of repair teams to work in other ECPs in direct support of forward units, or at traffic posts.

(3) Attachment of other repair teams to forward units to assist unit repair resources (eg, support of advance guards).

(4) Forward loading of repairable casualties to new sites.

c. Recovery. During mobile operations the recovery facilities of the field workshop will normally be under control of BEME or CREME and a brigade or divisional recovery control HQ will move with the formation main HQ. Recovery elements from corps may be attached to the brigade for the duration of the advance. Recovery tasks will be:

(1) Establishment of recovery vehicles at traffic posts, defiles and obstacles to keep routes clear.

(2) Maintenance of a recovery reserve.

- (3) Establishment of recovery control posts and ECPs.
- (4) Forward loading to workshop sites of repairable crocks left by LADs.
- (5) Attachment of personnel and vehicles to LADs and forward units when essential (eg, to LADs if many routes are used for forward brigades or to units to form an ad hoc LAD with the vanguard).
- (6) Control of casualties not yet recovered by third line units.

#### 516. RCEME PLAN

- a. The RCEME plan for the advance to contact must include the following points:
  - (1) Initial route clearance can be left to the ad hoc LAD of the advance guard and to forward units unless a large number of routes is being utilized when assistance from the recovery section may be needed.
  - (2) Continued route clearance will be effected by all recovery vehicles in the formation columns and by siting recovery posts at traffic posts and defiles.
  - (3) Casualties will be forward loaded to future workshop sites or to ECPs thus reducing the distances moved before eventual return to units. An exception will be made in the case of Z casualties.
  - (4) BEME or CREME will retain control of the formation recovery resources during mobile operations. In order to be kept in the "G" picture, the recovery control HQ will be established at main formation HQ.
  - (5) During mobile operations especially, casualties must be reported quickly and accurately to allow action to be taken quickly and effectively.

- (6) The field workshop will normally be pre-sited at or near ECPs already established.
- (7) The field workshop must remain long enough in one site to carry out useful work but repair teams must be forward continually to keep up with the speed of the advance and to provide continuous repair facilities.
- (8) Medium workshops will move forward to sites vacated by the advancing field workshops.
- (9) Casualties must be repaired as soon as possible and recovery traffic must be restricted on the advance route to maintain the speed of advance. In order to carry this out, repair teams will be sited at recovery posts to effect minor repairs in situ.

#### 517. THE ATTACK

The main attack, using a combination of overwhelming fire power, determined battle groups and shock effect of air landed troops is the ultimate means used by the higher commander to achieve his aim - the destruction of the enemy. The main attack is divided into the following stages - preparatory, assault and reorganization.

#### 518. PREPARATORY STAGE

- a. This stage which includes the assembly and move to the start line and the penetration to the area of the final objective will be the period of maximum repair effort to ensure that all units are complete in equipment. RCME units will operate as follows:
  - (1) LADs. LADs will concentrate on those repairs which can be carried out most quickly and on "tuning-up" serviceable equipments. All other casualties will be backloaded in the normal manner to the field workshop.
  - (2) Field Workshop. The field workshop will be sited near the probable axis of attack as

far forward as possible to accept the heavy load to be expected initially. Priorities will be placed on the repairs to allow the workshop to move forward at short notice to support any break-out and pursuit. Casualties which cannot be repaired will remain in situ when the workshop moves forward.

- (3) Forward Repair Group. Forward repair teams will operate as far forward as permitted carrying out emergency field repairs. This work will continue until the repair teams rejoin the workshop as it moves forward to support the break-out and pursuit.

#### 519. ASSAULT AND REORGANIZATION

- a. This phase may include the breaching of a major obstacle and will result in the capture of the main objective. The main RCEME aim at this stage is to keep traffic flowing through the breach and is basically a recovery problem.

- (1) LADs. LADs will remain with A echelon sited as far forward as possible and the tasks will be:

- (a) Emergency unit repairs and light running repairs in situ or at LAD site.
- (b) Route clearance in unit areas.
- (c) Recovery of casualties to LAD site or notification of casualties to BEME or CREME.

(2) Field Workshop. The field workshop during this phase will have the following tasks:

- (a) Provision of recovery resources for the breaching task, route clearance and concentration of casualties.
- (b) Provision of repair teams to reinforce the recovery posts and LADs etc to carry out maximum emergency field repairs in forward areas.
- (c) Attachment of personnel and equipment to LADs to augment resources forward.
- (d) The remainder of the workshop will be preparing to support the pursuit by clearing up outstanding high priority work and will remain lightly loaded pending the expected move forward.

(3) Recovery

- (a) Recovery resources will normally be centralized under HQ RCEME control just prior to the assault. Full recovery support across the obstacle will be necessary. A recovery control HQ will be established well forward by BEME or CREME.
- (b) Recovery posts must be established on both sides of the breach. A plan must be made to cater for the vehicle and equipment casualties forward of the gap, but at this stage it will be obviously not feasible to site a workshop forward. An ECP will therefore be established which can be used as a future workshop site. Route clearance will be essential.
- (c) Other tasks will include recovery in unit and brigade group areas, and backloading of casualties from units and LADs to workshops or repair teams.

520. PURSUIT

- a. The pursuit and advance to contact are similar except that exploitation follows the defeat of an enemy whose degree of co-ordinated resistance and morale has been considerably reduced. Speed becomes the dominant factor. Immediately prior to launching the pursuit, the RCEME units in the formation have been preparing to move forward by clearing up the repairs which could be done quickly and by concentration in ECPs those equipments which could not be repaired.

- (1) LADs. LADs will move well forward in the A echelons of parent units and will concentrate on:

- (a) Running repairs only.
- (b) Forward loading to ECPs of repairable casualties which can be repaired by brigade resources.

- (c) Route clearance.

- (2) Field Workshop. Some of the repair teams will remain forward to augment the unit repair elements of the advance guard, and other teams will rejoin the workshop as it moves forward. The workshop will again be established at an ECP well forward.

- (3) Recovery. The recovery resources will continue to be centralized under BEME with recovery control continuing to function and the main tasks will be:

- (a) Route clearance.
- (b) Manning recovery posts.

- (c) Battlefield clearance.

## SECTION 4 - THE WITHDRAWAL

### 521. AIM

- a. The aim of the withdrawal is to occupy a new defensive position with as little interference from the enemy as possible. The method of withdrawal will differ as follows:
  - (1) In non-nuclear war an intact front must be maintained at all times by leap-frogging troops back through a series of intermediate positions based on well defined features.
  - (2) In nuclear war the bulk of the formation must make a clean break and make one long move back to the new main position covered by a strong rearguard.
- b. The aim of RCEME is to ensure that the maximum amount of equipment reaches the new main position safely. RCEME can achieve this aim by:
  - (1) Keeping routes clear.
  - (2) Maintaining in a battleworthy state the maximum amount of fighting equipment.
  - (3) Preventing equipment casualties from falling into enemy hands.
  - (4) Backloading all possible equipment casualties.
  - (5) Maintaining morale.

### 522. ROLE OF RCEME UNITS IN WITHDRAWAL

- a. LADs. LADs withdraw with their parent unit, usually moving with A echelon although the non-essential vehicles may move with B echelon. LAD repair and recovery resources will remain as far forward as possible. Tasks will be:

- (1) Quick running repairs in situ or at LAD site.
  - (2) Backloading casualties requiring heavier repair.
  - (3) Route clearance in unit areas.
  - (4) Destruction of equipment that cannot be backloaded (in conjunction with parent units).
- b. Field Workshops. These will be moved to the rear (less the forward repair group and recovery section) with the logistic group. Prior to the move the quickest and simplest repairs will be carried out first to reduce to a minimum the number of equipments requiring backloading.
- c. Forward Repair Group. Repair teams will be centrally controlled and will be deployed well forward to provide emergency repair resources for:
- (1) Units.
  - (2) LADs.
  - (3) Rearguards.
  - (4) ECPs, traffic and recovery posts, BLPs.
- d. Recovery. Recovery resources will also be centrally controlled and will be carrying out:
- (1) Route clearance on all main withdrawal routes including assistance to the TC organization.
  - (2) Backloading of repairable casualties from LADs, units and ECPs at successive defence positions. These casualties will be concentrated at an intermediate BLP by the remaining field workshop recovery resources.

- (3) Backloading of the field workshop internal load and the casualties at the intermediate BLP to the medium workshop or to the new location of the field workshop. This is normally done by corps recovery resources and any remaining field workshop facilities.

## 523. THE RCEME PLAN

- a. The main points which must be covered in the RCEME plan are:
  - (1) Route Clearance. This can best be effected by establishing recovery posts integrated with the traffic control organization whenever possible. Recovery facilities must be centrally controlled by the senior EME while the formation is on the move.
  - (2) Continuous Repair Support. This can best be provided by intelligent deployment of the repair teams of the forward repair group well forward with units, LADs and recovery posts. These teams will withdraw only on orders of the formation commander or senior EME.
  - (3) Recovery in Forward Areas. Covering troops and armoured regiments especially will seldom have sufficient recovery resources during this type of operation. It will be necessary for the senior EME to place extra recovery vehicles under command of the appropriate OC LAD or unit commander where there is no LAD.
  - (4) Backloading. There will likely be a number of equipments in the workshop under repair or awaiting repair or backloading. The BEME or CREME is responsible for these equipments but since his recovery resources are deployed forward on route clearance, corps recovery and RCASC will have to provide assistance. All means available will have to be used.

## SECTION 5 - SITING, MOVEMENT AND DEPLOYMENT

### 524. SITING AND MOVEMENT OF LADs

The movement of a LAD and the general area in which it is sited are ordered by the CO of the parent unit. The LAD commander on the other hand should always be on the lookout for suitable sites and be prepared to advise his CO accordingly. The LAD site is normally adjacent to A echelon and close to the brigade axis, using any cover and hard standing available. Changes in LAD locations must be reported immediately to the BEME.

### 525. SITING OF WORKSHOPS

- a. In general the main considerations for siting a workshop are good working conditions, protection and the length of time it is to remain in one place. Most administrative units, except a workshop, can function "on wheels" and workshops also require a longer time to unpack and pack than most other units.
- b. Areas for workshop locations are normally selected by the formation senior EME and confirmed by the Q staff. When a field workshop or portion of it is to be sited within a formation logistic area, the actual workshop site must be in agreement with the Q co-ordinating officer who accompanies unit recce parties.
- c. When the workshop is to be located well outside the boundaries of the logistic area, prior agreement must be obtained from the senior Q staff officer. When a promising future workshop site is noted in the forward areas by the BEME or CREME, the site will often become an ECP during operations and subsequently occupied by the field workshop.

### 526. EARLY WARNING

- a. Movement of workshops when ordered by BEME or CREME is normally preceded by a warning order as detailed in paragraph 505. During

certain phases of operations it will be necessary to restrict workshops to tasks which can be completed in a certain stated time, eg, 4, 12 or 24 hours.

- b. On receipt of the work time limit in the warning order the workshop will immediately begin to backload all work that cannot be repaired in the specified time, but will continue to accept casualties which can be repaired within this time limit.

## 527. DEPLOYMENT DRILLS

- a. After receipt of a warning order, a workshop must be able to stop work, pack up and be ready to move within two hours of receiving the order to close. It must also be able to re-deploy, open up and be ready for work within two or three hours of arrival at a new site. These tasks must be completed without loss or damage to equipment or tools. This necessitates:
  - (1) An efficient thoroughly trained organization.
  - (2) A sequence of events in opening and closing incorporated into a drill.
  - (3) A specific task for each individual to be completed in the time available.

## 528. SEQUENCE OF EVENTS

- a. The normal sequence of events in the move of a workshop is as follows:
  - (1) Receipt of warning order.
  - (2) Restriction of work and commencement of backloading equipment that cannot be repaired before the move.
  - (3) Preliminary recce of the new area by the workshop commander or his 2IC.

(4) Receipt of order to move.

(5) Workshop commander's "0" group. Rear party selected.

(6) Movement of advance party to new area.

(7) Workshop packs up ready to move.

(8) Move of workshop; column meets advance party representative at RV.

(9) Deployment in new site.

(10) Senior EME informed of completion of move and exact location.

(11) Rear party joins main body.

- b. The siting, movement, deployment and defence of RCEME units will be covered in detail in CAMT 11-3, "Command of a RCEME Field Unit".

## SECTION 6 - LOCAL DEFENCE AND CONCEALMENT

### 529. DEFENCE

- a. Defence of the locality occupied by a RCEME unit or sub-unit must be organized with a view to defeating raids or limited attacks by enemy AFVs, infantry or airborne troops, saboteurs or aircraft. Although all RCEME units must be trained to give a good account of themselves when attacked, it will seldom be possible to defend an entire workshop perimeter against a determined attack without considerable assistance from other troops. In addition, workshops are sited primarily for a high rate of output rather than for ease of defence.
- b. In planning his local defence, a RCEME commander will always be faced with the problem of doing as much as possible with the resources available, knowing at the same time that

he cannot meet all requirements. His plan must therefore deal first with essentials of major importance as follows:

- (1) The defended perimeter should enclose the vital sections of the unit and should include any local dominating features if possible.
- (2) Natural obstacles and likely approaches should be covered by fire.
- (3) Road blocks should be placed on routes leading into the site and manned when the alarm is given.
- (4) Slit trenches must be dug for all personnel in platoon and section areas and also beside vehicles. They should form a series of defended posts, mutually supporting and providing all round defence.
- (5) A reserve of suitable size should be held at a central command post.
- (6) Good communications must be arranged between the command post and the defence sectors.
- (7) Maximum use should be made of the armament of any AFVs which are in the workshop for repair.

### 530. SURPRISE ATTACK

Precautions against surprise attack must be taken by RCEME units immediately on arrival in a harbour area, or during long halts when on the move. Particular attention must be paid to the digging of slit trenches and the preparation of road blocks. In addition, a complete blackout may be necessary during the hours of darkness.

### 531. CONCEALMENT

- a. Concealment and dispersion provide the main protection against air attack and all RCEME personnel should be familiar with the technique of using camouflage nets and other devices to break up the outline of vehicles and equipment when viewed from the air.
- b. Camouflage and concealment are discussed in detail in CAMT 11-3. "Command of a RCEME Field Unit", but the following points are of particular importance:
  - (1) Rigid concealment discipline is mandatory due to the unusual role of RCEME units where movement of vehicles and personnel is necessary.
  - (2) Layout of the unit will have to be a compromise between dispersion to obtain concealment and concentration for good working efficiency.
  - (3) If movement of personnel and vehicles cannot be concealed, the most successful camouflage of vehicles and equipment will be wasted.
  - (4) Whenever possible, obtain covered sites to hide as much as possible, disguise as much of the remainder as possible and disperse whatever is left.
  - (5) Many RCEME vehicles are of unusual size and function and could provide useful intelligence to the enemy, ie, transporters, wreckers, shop vans and arc welding equipment.
  - (6) Due to the large amount of traffic in and out of RCEME units and the large casualty parks, natural facilities are preferable for concealment especially entrances, exits and traffic circuits.

SECTION 7 - NON-NUCLEAR WAR532. GENERAL

In all types of warfare the common requirement for the repair and recovery organization is flexibility. In non-nuclear war however, since tactical methods will vary, so will the deployment of the RCEME resources. These differences in deployment are summarized below and should be studied in conjunction with CAMT 1-8, Chapter 9.

533. DIFFERENCES

- a. The control of repair and recovery will be centralized at the highest level.
- b. The increased concentration of units and formations will result in faster service by repair and recovery teams.
- c. RCEME repair resources will be concentrated with a resulting increase in economy and efficiency. This will counter-balance the larger number of non-battle casualties caused by the increased mobility of units.
- d. Backloading and recovery activities will be greatly restricted due to the increased route congestion caused by the concentration of units and formation.
- e. RCEME units will have little difficulty in keeping up with the movement of formations since the progress of battle will be slower.
- f. Greater emphasis will be placed on the defence of RCEME units due to the increased likelihood of enemy attacks by airborne forces.
- g. The probability of attacks by enemy aircraft will require elaborate camouflage and concealment.
- h. Repair and recovery tasks will be completed more quickly due to the absence of radioactive contamination on equipment.

CHAPTER 6COMMUNICATIONSSECTION 1 - GENERAL

601. a. The need for efficient communications is of paramount importance to RCEME because of:

- (1) The wide dispersion of units of the field force. This will necessitate close control being exercised over the widely dispersed repair and recovery teams.
- (2) The vital responsibility of RCEME in maintaining the greatly increased mobility of the field force by the immediate notification of equipment casualties and orders for dealing with them.
- (3) The extreme difficulty in backloading equipment in most cases. This will result in the necessity of performing in situ repairs as normal procedure.
- (4) The rapid movement of field force units. This will result in continual re-deployment of RCEME resources and frequent requests for parts and assemblies.

b. In addition to these emergency requirements, normal communication facilities are necessary for:

- (1) Co-ordination and control of the major RCEME units.
- (2) Passage of periodic returns and detailed stores requirements.

c. Without an efficient communication system, intimate RCEME support cannot be assured and delays, confusion and inefficiency will result.

## SECTION 2 - REQUIREMENTS

### 602. GENERAL

The main communication requirements for RCME units in the brigade group are shown below. Communications for headquarters and units outside the brigade are dealt with briefly.

### 603. LADs

An LAD is normally provided with communications equivalent to those of the unit it serves. Thus an armoured LAD has radio sets in its squadron sections and in the ARVs so that they can be controlled when widely dispersed or on detached duties under higher control. Other LADs not organized to provide sections use the administrative net of the formation or unit which they serve. The normal communication link between the LADs, the field workshop and HQ RCME is via the formation administrative net.

### 604. BEME

The BEME will use the brigade administrative net.

### 605. CREME DIVISION AND DDEME CORPS

HQ CREME and HQ DDEME are each sited at rear HQ where they have access to the radio, line and SDS facilities provided by RC SIGS to main corps, division and brigade HQ. The DDEME and CREME will normally use the administrative nets provided.

### 606. FIELD WORKSHOP

The field workshop is normally sited in the brigade group administrative area and for normal operation can obtain adequate communication with the BEME and CREME by using existing brigade administrative radio, line and SDS facilities. When line is not available, the workshop would be an out-station on the administrative net.

SECTION 3 - SECURITY AND PLANNING607. SECURITY

- a. When radio communications are provided a high standard of security is vital. Security can only be achieved by good discipline and training in the use of correct voice procedure and codes.
- b. Security is especially important when sending:
  - (1) Top priority messages affecting recovery and repair in situ which nearly always include a map reference and may disclose the identity of a unit or the presence in the field of a new equipment.
  - (2) Equipment casualty states or returns which may disclose the extent and nature of losses suffered by a formation or unit in a particular action.
- c. Security will be maintained by the proper use of codes and when time is not vital by the maximum employment of DRs. The subject of security is fully covered in RC SIGS Training Pamphlets.

608. PLANNING COMMUNICATIONS

- a. Radio. When planning RCEME communications the following points must be borne in mind:
  - (1) The limited ground range of sets is an important consideration especially as sets on the same net will not normally have the same working range.
  - (2) The condition to aim for is that every station can hear and be heard by every other station. A good net can work well however as long as control can hear and be heard by all out-stations.
  - (3) If these ideal conditions were not possible, it would be necessary to break the large net down into three separate nets as follows:

- (a) BEME net with out-stations for forward repair group HQ, recovery control HQ, field workshop and CREME.
  - (b) Repair net with forward repair group HQ as control and each repair team an out-station.
  - (c) Recovery net with recovery control HQ as control and each recovery team an out-station.
  - (4) In any practiced RCEME net it is normal to have a large number of out-stations since messages concerning recovery and repair in situ can usually be kept brief.
  - (5) The RCEME control set should normally be sited as centrally as possible in the formation area to allow the best chance of good contact with subordinate nets and out-stations.
  - (6) Whenever radio communications cannot be provided to RCEME units, these units must be sited near available line and SDS facilities.
- b. Line. Whenever possible maximum use should be made of the excellent line facilities normally provided in the formation by RC SIGS. RCEME HQ and workshops are connected to the formation HQ switchboards and administrative area switchboard respectively. Line conversations between officers provide a quick means of passing information or of clearing up difficulties. Line communications also provide all arms and services with a means of passing messages rapidly and securely through RC SIGS channels.
- c. DRs. Formation signals run a regular SDS to all units of the formation and provide an excellent means of supplementing line and wireless facilities. During operations it is normal to allocate RCEME DRs to the major RCEME HQ

and units in addition, for carrying urgent messages. These RCEME DRs are provided under arrangements made by the senior EME.

#### 609. RESPONSIBILITIES OF RCEME OFFICERS

- a. All RCEME officers have a vital part to play in ensuring that RCEME communications work efficiently. This will be achieved by:
  - (1) Appreciating the value of good communications and giving them the fullest consideration in planning.
  - (2) Knowing proper radio procedure and the characteristics and limitations of all radio sets used by RCEME.
  - (3) Knowing how to site sets to the best advantage.
  - (4) Understanding the use of codes and the effects of allotted frequency on radio communications.
  - (5) Ensuring that all operators are properly trained.

CHAPTER 7INSPECTIONSSECTION 1 - EQUIPMENT INSPECTIONS701. GENERAL

The effectiveness of unit servicing and the results of careful use, or of neglect are disclosed by regular equipment inspections. Thorough inspection procedure at all levels will result in improved servicing and, in turn, a lower incidence of equipment faults.

702. UNIT EQUIPMENT INSPECTIONS

- a. Unit commanders are directly responsible for their unit equipment and must carry out regular inspections to ensure that it is complete and serviceable. Unit inspections are carried out by unit officers or NCOs and are not highly technical. Their purpose is to ensure that driver servicing or team maintenance is effectively carried out and to disclose defects in the condition or performance of equipment. These defects are identified and classified either:

- (1) To be corrected by the unit, or
- (2) To be repaired by RCEME.

- b. Unit RCEME tradesmen or LAD personnel are available to assist in the diagnosis of faults or to give technical advice. It is neither in the best interests of the unit nor of the army that the complete inspection be carried out by RCEME at the expense of their primary role which is repair. Depending on mutual agreement between BEME or CREME and the unit commander, it is often to the benefit of the unit to have the LAD carry out a more thorough technical inspection periodically in place of one of the routine monthly unit inspections.

- c. An exception to the above is weapons inspections. Unit weapons technicians normally carry out quarterly inspections under unit arrangements and will

re-condition all unit weapons annually if necessary. This program should coincide with one of the quarterly inspections.

- d. Complete directions to unit commanders on the conduct of unit inspections are contained in EME Manual Instructions.

### 703. RCEME EQUIPMENT INSPECTIONS

- a. Purpose. The CREME or BEME is responsible for organizing a system of technical inspections for all units in the formation in addition to the normal unit inspections. These inspections are normally carried out annually but circumstances often necessitate a program during rest or refit periods. The purpose of the inspections is to:

- (1) Assess the standard of unit servicing.
- (2) Ascertain the repairs required.
- (3) Check the completion of authorized modifications.
- (4) Classify equipments according to their condition.
- (5) Advise the unit where improvement can be made.

- b. Vehicles, Weapons and Instruments. These types of equipment are inspected by teams of inspectors from the field workshop on a programme basis arranged by CREME or BEME. All units in the formation are inspected at least once annually.

- c. Electronic Equipment. Electronic inspection teams from the field workshops in radio repair trucks visit all units in the formation at least once every six months on a programme basis arranged by BEME or CREME. These teams check the efficiency of equipments

against specifications and carry out extensive repairs to the equipment on site. This facility is valuable since much time is saved and possible damage to delicate equipment during transport is prevented.

- d. Aircraft. Aircraft inspections are carried out as follows:
  - (1) Primary and between flight by qualified LAD or unit RCEME tradesmen as applicable.
  - (2) Periodic after approximately 100 hours flying time by field workshop personnel.
  - (3) Special when directed by higher authority by qualified unit, LAD or field workshop tradesmen.
- e. Reports. All inspections reported are passed to CREME or BEME before being forwarded through staff channels to the formation or unit HQ. Details of equipment inspections will be found in the applicable EME Manual instructions.

## SECTION 2 - INSPECTION OF RCEME UNITS

704. Administrative inspections are made in all RCEME units in the formation when conditions allow. These inspections are carried out by the formation commander or his staff accompanied by the CREME or BEME as applicable. LADs are always inspected at the same time as their parent unit.

705. In addition to periodic routine inspections of their vehicles and weapons etc and the administrative inspection, all RCEME units receive a technical inspection annually by a higher formation. The CREME or BEME normally carry out similar inspections of all LADs in the formation. These inspections are designed to inform the DEMO on the following in each unit:

- a. General technical efficiency.
- b. Workshop procedure.
- c. Quality of production.
- d. Economy in the use of tradesmen.
- e. Facilities for trade training.

## SECTION 2 - INSPECTION OF REGIME UNITS

Administrative inspections are made in all REGIME units in the formation when conditions allow. These inspections are carried out by the formation commander or his staff accompanied by the CREME or REGIME as appropriate. Units are always inspected at the same time as their parent unit.

In addition to periodic routine inspections of their vehicles and weapons etc and the administrative section, all REGIME units receive a technical inspection annually by a higher formation. The CREME or REGIME normally carry out similar inspections of all LADs in the formation. These inspections are designed to inform the DEMs on the formations in each unit.

Inspections must be under constant review so that appropriate provision can be taken and the maintenance needs for equipment to the unit's section.

## CHAPTER 8

### STORES SUPPLY

#### SECTION 1 - SYSTEM OF STORES SUPPLY

##### 801. PROVISION

- a. Without an adequate supply of the necessary spare parts and assemblies the output in LADs and field workshops is practically negligible.
- b. All spare parts, assemblies and expendable stores are provided by RCOC through the formation stores organization. The initial holdings of spares in both RCOC, RCEME and unit stores are based on scales compiled by the RCEME scales organization. The range of items must include all spares required for unit or field repairs and the quantities stocked must be based on the maintenance requirements of the total number of equipments held by the formation for a given period.

##### 802. REVIEW OF SCALES

There must be close co-operation between RCEME and RCOC to ensure that adequate levels of spares are maintained at all times both in RCOC stores sections and in units. RCEME must initiate amendments to scales through CROC and CREME when issue experiences indicate that holdings are incorrect.

##### 803. UNIT AND LAD SPARES

- a. Every unit is provided with a range of unit spares for use by unit or LAD tradesmen. For replenishment of their holdings, unit indents are submitted to the OFP. The OFP in turn issues from stock or obtains the item on behalf of the unit.
- b. Records of all issues must be kept and level of holdings must be under constant review so that appropriate provision action can be taken and recommendations made for adjustments to the initial scales.

- c. In units with LADs, the stores are handled by the LAD storeman and may be operated under the joint control of the technical adjutant or MTO. Stores in units without LADs are handled by unit storemen.

#### 804. FIELD WORKSHOP SPARES

- a. An RCOC spare parts platoon is an integral part of each field workshop. This platoon which carries approximately 70 tons of stores has the primary task of holding and accounting for the spares and assemblies required by the workshop. Stocks are generally limited to 30 days requirements except for major assemblies where 15 days are held by the parts platoon and 15 days by the OFP on behalf of the parts platoon.
- b. The spare parts platoon is under command of the workshop. The senior RCOC officer of the formation is responsible for technical control and advice to the OC workshop on technical stores holding matters. Stores held by the platoon are for use by the field workshop except that in an emergency issues may be made to other units.
- c. Repair teams from the forward repair group will carry a small selected range of unit spares for emergency repairs. When despatched to carry out a field repair they will take the appropriate spare parts and assemblies with them. A detachment of the spare parts platoon will accompany the repair group to hold these spares. When additional assemblies are required in the forward areas, these will be despatched on a priority basis by helicopter or by maintenance convoy. The FRP holdings of spares will be replenished daily and when it returns to the field workshop. The spares requirement of the forward repair group will invariably lead to an upward adjustment of stock levels of the spare parts platoon, due to its method of deployment.

- d. Accurate records of consumption of parts are kept in accordance with RCOC regulations in order to maintain proper stock levels and to serve as a guide for recommending changes in the range of items and quantities.

#### 805. REPLENISHMENT OF STOCKS

- a. Spare parts platoons indent for major assemblies to the OFP which is replenished by the Ordnance Maintenance Company. All other spares are also obtained from the OFP but replenishment in this case is from the Fwd Ordnance Depot. Operationally urgent stores which are not available in the formation are specially marked by RCOC with a red star and sent by the fastest direct means from the nearest ordnance installation possessing the stores.
- b. Other methods may occasionally be used to obtain urgent stores such as:
  - (1) Local purchase.
  - (2) Manufacture by the workshop.
  - (3) Cannibalization.
  - (4) Dismantling of BR equipment.

#### 806. HELP YOURSELF PARKS

The establishment of a help yourself park (HYP) in the formation area sited in a convenient locality close to but not at the BLP should result in a decrease in the pilfering of parts from repairable equipment. Equipment rendered BR in the formation area is placed in the park so that units can get the material which they require.

#### 807. RECLAMATION

RCEME reclamation teams may be formed in the brigade area or sent forward by corps to strip useful

components from BR equipment. The material is then overhauled in workshops and put back into stock.

#### 808. RETURN OF REPAIRABLE ASSEMBLIES

Repairable assemblies must be packed at once in the packing cases in which the replacement assemblies were received and returned to base for repair as quickly as possible. It is a workshop responsibility to ensure that the assemblies are complete, properly secured and tagged. In this way rapid diagnosis and proper handling at the base is assured.

b. Other methods may occasionally be used to

obtain urgent stores such as:

(1) RCEM standing operating procedures.

(2) Local purchase.

(3) RCEM non standing orders.

(4) Manufacture by the workshop.

(5) RCEM operation orders.

(6) Cannibalization.

(7) RCEM technical instructions.

(8) Dismantling of BR equipment.

(9) RCEM training and exercise instructions.

#### 808. HELP YOURSELF PARKS

##### 808.1 HOW TO SET UP A HELP YOURSELF PARK

The establishment of a help yourself park

(HYP) in the formation area shall be a permanent facility

located at the end of the formation area, in a place

the setting of permanent repairable equipment, which

may be used by the formation area for the purpose of

repairing equipment which is damaged while in the formation

area. Both administrative and technical matters are now

being considered in unit and formation standing orders

but the following may be covered in a unit standing

order as shown in Annex C.

RCEM recommendation teams may be formed in

the formation area for the purpose of repairing

These orders are issued to HEMEs, held

workshops and LADs. Their aim is to ensure that all

## CHAPTER 9

### ADMINISTRATION

#### SECTION 1 - ORDERS AND INSTRUCTIONS

##### 901. GENERAL

- a. This section describes briefly the orders and instructions issued by CREME or BEME. Orders issued by field workshops and LADs will be included in CAMT 11-3, "Command of a RCEME Field Unit". Full guidance on the preparation, layout and contents of the various orders and instructions is contained in Staff Duties in the Field 1949.
- b. The following orders and instructions are normally issued when in the field or during training:
  - (1) RCEME standing operating procedures.
  - (2) RCEME unit standing orders.
  - (3) RCEME operation orders.
  - (4) RCEME technical instructions.
  - (5) RCEME training and exercise instructions.

##### 902. RCEME UNIT STANDING ORDERS

These orders cover all routine matters in which uniformity of action is necessary, other than those included in operating procedures. Good standing orders make it easier for officers and men to settle down quickly when posted from one unit to another within the formation. Both administrative and tactical matters are normally combined in unit and formation standing orders. Information which might be covered in a unit standing order is shown in Annex C.

##### 903. RCEME STANDING OPERATING PROCEDURES

These orders are issued to BEMEs, field workshops and LADs. Their aim is to ensure that all

RCEME units in the formation operate on the same general lines and follow a common technical policy. They are based on the formation standing orders and conform to the technical policy laid down by DDEME corps. Suggested points to be covered in standing operating procedures are shown in Annex C.

#### 904. RCEME OPERATION ORDERS

Written RCEME operation orders are seldom necessary except for complex or large scale operations. When they are issued they must be clear and comprehensive and follow the format of formation operation orders.

#### 905. RCEME TECHNICAL INSTRUCTIONS

- a. Technical instructions which are often the forerunner of an EME Instruction are issued by the senior EME of the formation to:
  - (1) Amplify current technical instructions issued by higher RCEME authority to show their application within the formation.
  - (2) Describe special action required to deal with particular defects.
  - (3) Give immediate information of any technical method or device that has been found of value.
- b. Technical instructions are sometimes issued in bulletin form and distributed to workshops and LADs, typical subjects include:
  - (1) Methods of packing and return of repairable engines and assemblies.
  - (2) Preparation of workshop planning data.
  - (3) Reclamation methods for sub-assemblies.
  - (4) Emergency repair techniques.

## 906. TRAINING AND EXERCISE INSTRUCTIONS

- a. In peacetime RCME training directives may be issued at the beginning of each annual training cycle for the guidance of BEMEs, field workshops and LADs. These instructions, based on the formation commanders training policy, will detail particular aspects of technical training to be studied closely by RCME personnel. This will allow all units to plan their individual, sub-unit and collective training. The following points would be covered:
  - (1) Individual - winter training, study periods, officer and warrant officer training.
  - (2) Communications - voice procedure, handling equipment.
  - (3) Recovery - handling equipment, practicing new techniques.
  - (4) Repair techniques - assembly changes, emergency repairs.
  - (5) Weapons - handling and firing.
  - (6) Miscellaneous - protection, driving, hygiene, map reading, cooking, films.
  - (7) Sub-unit, unit and collective.
- b. Further instructions may be issued from time to time to cover additional training requirements such as major exercises.

## SECTION 2 - REPORTS AND RETURNS

### 907. GENERAL

An efficient and simple system is required to ensure that reports, returns and states called for, or submitted by, the formation or EME are accurately prepared and consolidated, and that they reach their

destinations in time to be of use. A frequent review of this list of returns is necessary to eliminate any that no longer serve a useful purpose.

#### 908. REPORTS AND RETURNS

- a. Reports and returns from BEMEs, field workshops, LADs and the formation BLP are normally delivered to the formation senior EME by a certain time daily as laid down in RCEME or formation standing orders. After consolidation these reports and returns are despatched by SDS to DDEME Corps with copies to the formation staffs.
- b. These reports and returns are those normally found in any formation. The types, format, and procedures depend on the policy of the formation commander and his RCEME adviser. Alterations will often be necessary to suit local conditions. Details of these reports and returns are shown in Annex D.

### SECTION 3 - GENERAL FIELD ROUTINE

#### 909. GENERAL

- a. HQ RCEME in the division and corps is the hub of all RCEME activity in the particular formation. Each member of the various staffs has his particular duties, but all must work as a team. In addition all officers must be fully in the RCEME picture at all times and other ranks must be regularly briefed.
- b. In general the task of any HQ RCEME is:
  - (1) Routine duties of any normal HQ.
  - (2) Collection and recording of technical information for use by other RCEME HQ and formation staffs.

- (3) Issuing technical orders and instructions to RCEME units and tradesmen.
- (4) Dealing with reinforcements, promotions, technical training and Corps matters for all RCEME personnel in the formation.

#### 910. OFFICE LOG

a. This log is a continuous record of all important happenings and is the chief source of material for SITREPs and war diary. The form and detail to be recorded are shown in Staff Duties in the Field. Important items to be recorded in the HQ RCEME log are:

- (1) The gist of all important telephone messages and reports received.
- (2) Names of visitors and the purpose of their visits.
- (3) Summary of all IN and OUT messages.
- (4) Time of issue of orders and instructions, and times of 0 groups.
- (5) Movements and locations of the senior EME and other officers of HQ RCEME.

#### 911. WAR DIARY

The war diary which is usually kept by the adjutant is a continuous historical record of important events entered up daily commencing on mobilization. The aim, contents and responsibility for keeping war diaries are fully described in Staff Duties in the Field.

#### 912. PERSONNEL DOCUMENTATION

- a. Although many of the RCEME personnel in the formation are administered by other arms, the senior EME is responsible for advice and assistance to units on handling of RCEME tradesmen. In order to enable him to use the

resources to the best advantage, a card index system is maintained with individual cards for each officer and other rank. In general these cards contain the following information:

- (1) Personal particulars.
- (2) Qualifications and courses attended.
- (3) Dates of rank and promotions.
- (4) Postings and appointments or record of service.

b. To supplement the card index the following records are often of value when considering postings and promotions:

- (1) Seniority lists of artificers, technicians and non-tradesmen.
- (2) Unit strengths by trades and by ranks.
- (3) Warrant officers and staff-sergeants by trades and units.

### 913. TECHNICAL RECORDS

a. A competent technical section working under the 2IC in HQ RCEME is essential in order to:

- (1) Maintain accurate statistics.
- (2) Act as a clearing house for technical reports.
- (3) Provide technical information for the formation.
- (4) Record workshop loading and output, modification states, tank mileage charts, equipment, performance records, etc.
- (5) Distribute EME and other technical instructions.

- (6) Co-ordinate and record defect reports on equipment received from different sources.
- (7) Investigate and comment on all reports before forwarding to higher authority.

#### 914. OFFICE SECURITY

- a. Regulations for the classification of documents and the security of offices are contained in Staff Duties in the Field. Rules applicable to HQ RCEME are incorporated in standing orders and describe the action required for:
  - (1) Protection of documents, disposal of keys, etc.
  - (2) Use of codes.
  - (3) Issue and use of pass words.
  - (4) Destruction of equipment and documents in an emergency.
  - (5) Checking identity of visitors.

#### 915. MISCELLANEOUS POINTS

- a. POL Reserves. RCEME units are notified from time to time of the reserves of POL to be carried. This is usually expressed as full tanks plus fuel for a specified milage. Commanders must know the fuel consumption of each unit vehicle when calculating POL reserves.
- b. Administration of Teams and Detachments
  - (1) Recovery sections and forward repair groups employed away from their parent unit normally draw POL and rations direct from supply points under Q staff arrangements.

- (2) Recovery posts and repair teams are normally administered by the parent recovery section and forward repair group respectively.
  - (3) The BLP staff are normally rationed by the nearest field workshop or recovery section.
  - (4) All recovery vehicles, repair vehicles, transporters and wireless vehicles detached from their parent unit should be equipped with field cooking equipment.
  - (5) Workshops and recovery sections and forward repair groups should hold a reserve of rations to cater for crews of vehicle casualties.
- c. Personal Hygiene. Tradesmen must be prepared for long hours of heavy and often tedious work. It is therefore necessary to improvise bathing facilities since RCOC laundry and bath facilities are not always available. Special precautions are necessary by men working in contact with gasoline and diesel fuel to prevent dermatitis.
- d. Medical. On arrival at a new site, units must find out the location of the nearest medical post. All recovery vehicles carry first aid kits and as many men as possible should be given training in first aid.
- e. Camp Sites and Harbour Areas. A high standard of cleanliness and hygiene must be enforced on all RCEME teams and detachments occupying small camp sites for short periods. In particular they must be trained to burn or bury refuse, to dig and fill in latrines and to mark and date all foul ground.

## CHAPTER 10

### TRAINING

#### SECTION 1 - INTRODUCTION

##### 1001. GENERAL

The task of every unit in peace is to train for war and to achieve a high standard of peace-time administration. Most RCEME units have the same role in peace as in war, which adds greatly to the training value of their every day routine work.

##### 1002. TRAINING CYCLE

- a. Training directives are issued by formation HQ with the aim of bringing units up to the standard of training required in a war in which either nuclear or conventional weapons may be used. The programme is usually a cycle of training as follows:

- (1) Individual Training. This phase includes individual training in general military subjects and trades training.
- (2) Unit and Sub-unit Training. During this phase the complete unit is exercised tactically and technically.
- (3) Collective Training. This phase of the programme normally culminates in a formation exercise.

- b. The normal system of training RCEME personnel and units is described more fully in CAMT 11-3, Command of a RCEME Field Unit.

#### SECTION 2 - MILITARY AND TECHNICAL TRAINING

##### 1003. MILITARY TRAINING

- a. Military training in RCEME units is the

responsibility of unit commanders who produce annually their unit training programme which is based on the training directives issued by formation HQ.

- b. In the larger LADs the detachment commander undertakes military training with some assistance from the parent unit. RCEME personnel in smaller LADs and in units of other arms do their training with the parent unit.
- c. Every advantage should be taken of training facilities and courses offered by units of other corps such as:
  - (1) RCE - mine detection and mine lifting for recovery personnel.
  - (2) RC Sigs - radio operator training for driver-operators.
  - (3) CFMS - field hygiene and water duties for RCEME non-tradesmen.
- d. Officer training is normally carried out on a formation basis and includes TEWTs, syndicate discussions and lectures.

#### 1004. TECHNICAL TRAINING

- a. Much of the technical training of RCEME personnel is accomplished through their daily employment at their trades. This training must be supplemented by theoretical instruction and by training in new methods and techniques.
- b. The preparation of individuals for advancement in their trades in particular the upgrading of young craftsmen from Group I to Group II and III is a unit responsibility. The senior EME in the formation normally coordinates technical training and arranges for trade tests and courses etc.

- c. Field workshops normally provide facilities for technical training, trade testing and up-grading RCEME tradesmen of all units in the formation. Advanced training and trade tests for higher grades are usually carried out in larger RCEME units possessing suitable staff and facilities.
- d. Courses for all ranks in special subjects such as recovery, radar, gun control equipment etc are normally organized in training establishments outside the formation. Vacancies are requested as necessary by HQ RCEME and sub-allotted to units in the formation.
- e. Training in recovery requires special attention since it is difficult for recovery personnel especially ARV crews to get full experience in peacetime. It is usual for a formation recovery camp to be set up by the field workshop to conduct special exercises.

### SECTION 3 - FIELD TRAINING

#### 1005. FIELD TRAINING

- a. In peacetime RCEME units have few opportunities for training in their war role under field conditions. Exercises and manoeuvres do not last long enough for the recovery and repair organization to be thoroughly tested. In addition, during collective training RCEME units are expected to function in their normal role rather than to train for it. Therefore, the normal unit tactical and technical training must be completed before formation exercises take place.
- b. It is good practice to put LADs and workshops out in the field for periods up to one month prior to the collective training period with the main purpose of exercising all ranks in their normal job away from barracks. Work should be accepted and dealt with according to war-time routine.

- c. In addition to these periods a succession of short exercises should be held at convenient times throughout the year to exercise the units in movement, defence, concealment etc which would be necessary in war.
- d. In all major exercises equipment casualties should be created by umpires to test the repair and recovery system. These casualties should be processed through the system as if real and only released by RCEME umpires after the parts required have been drawn and the appropriate manhours theoretically expended.

#### SECTION 4 - RCEME REINFORCEMENTS

##### 1006. GENERAL

- a. The efficiency of RCEME units depends largely upon the standard of technical training of tradesmen and the availability of all types in sufficient numbers to keep units up to establishment. This efficiency will be maintained if RCEME controls the following:
  - (1) The supply and allocation of RCEME reinforcements.
  - (2) The handling of RCEME reinforcements in the formation while awaiting posting.
- b. This control will ensure that:
  - (1) Tradesmen are not kept idle for long periods in reinforcement camps.
  - (2) Men are posted to units according to their capabilities.

##### 1007. MOVEMENT OF RCEME REINFORCEMENTS

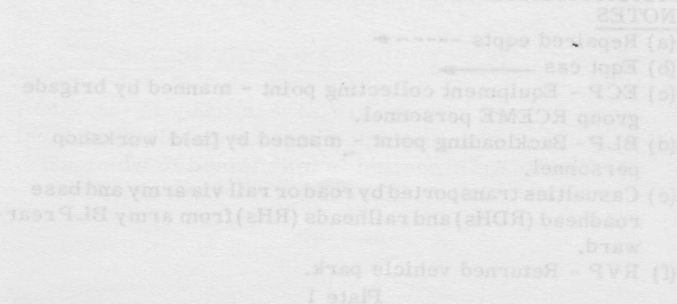
- a. Base. Drafts are sent initially to the base reinforcement unit where, if possible, a separate RCEME section is maintained to which all RCEME reinforcements are received and

casualties from hospital are returned. This section would make arrangements, if feasible, for continuity of trade training and trade testing by temporary attachment to base repair installations. This would be done pending postings to brigades and units.

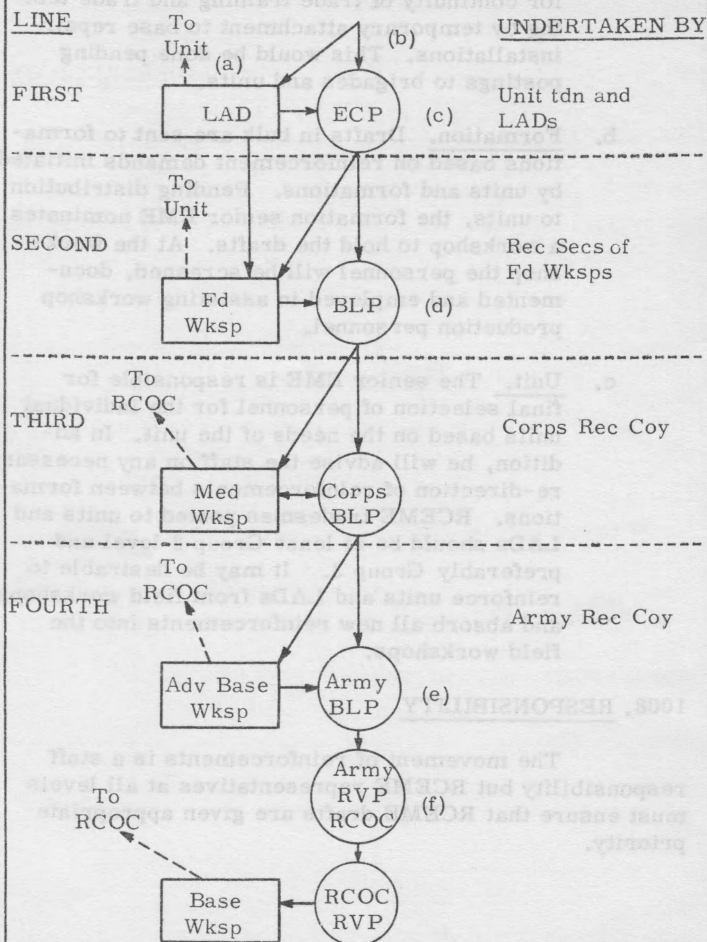
- b. Formation. Drafts in bulk are sent to formations based on reinforcement demands initiated by units and formations. Pending distribution to units, the formation senior EME nominates a workshop to hold the drafts. At the workshop the personnel will be screened, documented and employed in assisting workshop production personnel.
- c. Unit. The senior EME is responsible for final selection of personnel for the individual units based on the needs of the unit. In addition, he will advise the staff on any necessary re-direction of reinforcements between formations. RCEME tradesmen posted to units and LADs should be at least Group 2 level and preferably Group 3. It may be desirable to reinforce units and LADs from field workshops and absorb all new reinforcements into the field workshops.

#### 1008. RESPONSIBILITY

The movement of reinforcements is a staff responsibility but RCEME representatives at all levels must ensure that RCEME drafts are given appropriate priority.

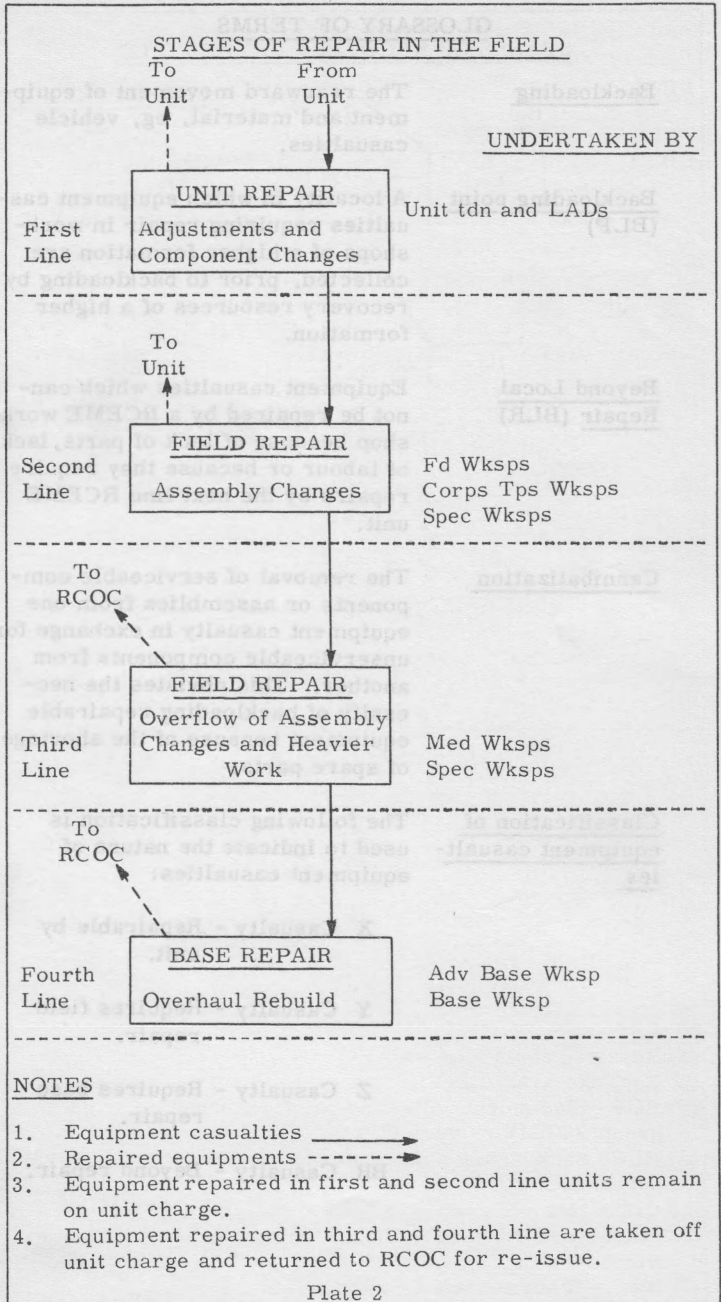


## STAGES OF RECOVERY IN THE FIELD



## NOTES

- (a) Repaired eqpts ----->  
 (b) Eqpt cas ----->  
 (c) ECP - Equipment collecting point - manned by brigade group RCEME personnel.  
 (d) BLP - Backloading point - manned by field workshop personnel.  
 (e) Casualties transported by road or rail via army and base roadhead (RDHs) and railheads (RHs) from army BLP rearward.  
 (f) RVP - Returned vehicle park.



GLOSSARY OF TERMSBackloading

The rearward movement of equipment and material, eg, vehicle casualties.

Backloading point (BLP)

A locality in which equipment casualties requiring repair in workshops of a higher formation are collected, prior to backloading by recovery resources of a higher formation.

Beyond Local Repair (BLR)

Equipment casualties which cannot be repaired by a RCEME workshop because of lack of parts, lack of labour or because they require repairs by the next line RCEME unit.

Cannibalization

The removal of serviceable components or assemblies from one equipment casualty in exchange for unserviceable components from another. This obviates the necessity of backloading repairable equipment because of the shortage of spare parts.

Classification of equipment casualties

The following classification is used to indicate the nature of equipment casualties:

X Casualty - Repairable by unit.

Y Casualty - Requires field repair.

Z Casualty - Requires base repair.

BR Casualty - Beyond repair.

The definition of a Y casualty may be further sub-divided for use within RCEME into:

Y 1 Casualty - Requires field repair in second line (Field) workshops.

Y 2 - Casualty - Requires field repair in third line (Medium) workshops.

Component

A specific part of an assembly, vehicle or equipment.

Crock

See: Equipment casualty.

EME Manual

Instructions issued under the authority of the QMG, containing technical data, modification instructions, and matters relating to the operation and functioning of equipments and RCEME units.

Electrical equipment

Equipment which for its operation requires the passage of electrons through a solid or liquid or gaseous conductor.

Electronic equipment

Equipment which for its operation requires in some part of it the passage of electrons through a rarified gaseous space or semi-conductor such as a vacuum tube or transistor.

Equipment casualty (Crock)

An equipment in need of recovery or repair by RCEME personnel.

Equipment casualty park

The area in a RCEME workshop allotted for equipments awaiting repair.

- Equipment collecting point (ECP) A location where vehicles or major equipments beyond unit repair are collected, prior to backloading by second line recovery resources.
- Equipment issue scales (EIS) Are documents listing the component parts, essential ancillaries and spares which together form an equipment normally accounted for as a single item.
- Equipment tables Are documents which detail a portion of the total equipment entitlement of a unit.
- Evacuation The rearward movement of an equipment casualty from the formation area to a base installation.
- Examination The process of ascertaining in detail the condition and state of wear of an equipment by a thorough examination of the various parts and by the use of the appropriate gauges; also where necessary, carrying out accuracy and functioning tests to determine the serviceability of the equipment.
- Help yourself park (HYP) An area where derelict equipment not worth backloading is dumped and is available for stripping by all comers.
- Inspection A visual inspection not involving the use of tools and gauges. Carried out periodically by RCEME personnel to ensure that the equipment is in serviceable condition and that necessary repairs and adjustments and all authorized modifications have been carried out.

Line The classification assigned to a RCEME unit according to its position in the repair organization. The term has no geographical significance.

a. First line units (LADs or unit tradesmen) undertake unit repairs.

b. Second line workshops undertake field repairs.

c. Third line workshops undertake field repairs, but usually those backloaded from second line workshops, either to prevent overloading or because of the time factor.

d. Fourth line workshops undertake base repairs.

Maintenance  
(of equipment) Any action taken to keep equipment in a serviceable condition or to restore them to a serviceable condition when unserviceable. Thus maintenance includes servicing, repair, inspection, rebuilding, reclamation, modification and recovery.

Major assembly A combination of components or minor assemblies forming a self-contained part of a vehicle or equipment, eg, an engine or a gun recoil system.

Materiel Consists of all movable public property other than money, provided for the Army and includes vehicles, missiles, arms, ammunition, clothing, stores, provisions or equipment so provided.

Minor assembly A sub-assembly, eg, a carburettor, firing mechanism, or aerial assembly, which may form part of a major assembly.

Modification A change in the design or assembly of an equipment to increase safety, reduce maintenance or increase operating effectiveness.

Part A specific item which is not normally further broken down into items for repair or part replacement (eg, shock absorbers, bumper, radiator).

Permissive repair schedules (PRS) A category of EME Manual instructions which are a technical guide to the extent of repair work which may be carried out as successive stages of repair for each class of equipment. They are an indication of the scope of repairs within each line, and are not rigid rules.

Rebuild To restore an equipment to complete serviceability by replacing defective parts with new or rebuilt parts. Synonymous with overhaul and recondition.

Reclamation A controlled process of stripping equipments, casualties, assemblies, and components to obtain serviceable or repairable assemblies, components, or spare parts for return to RCOC stock.

Recovery The process of extricating an equipment casualty from the place where it has become disabled or defective, and moving it to the first place where repairs can be effected, or from which it can be backloaded.

In its broader sense the term not only covers this process, but also backloading and evacuation.

#### Recovery control

The arrangements set up to execute a recovery plan, to provide continuous control of recovery resources, and to collect and pass back recovery information.

#### Recovery post

A small recovery detachment mounted at a specific point for duty at a defile, in a certain area, or between certain limits on a route.

#### Repair

The work done on unserviceable equipment, components or assemblies to restore them to serviceability.

#### Repair classification

Repairs are classified according to the amount or type of work they involve, into three groups:

- a. Unit repairs. Are minor repairs, replacements, and adjustments that can be carried out in unit areas by unit tradesmen or in the LAD servicing the unit.
- b. Field repairs. Are those beyond the capacity of units and LADs and mainly comprise the replacement of defective assemblies. In addition certain repairs to assemblies and other items are classified as field repairs.
- c. Base repairs. Are those beyond the capacity of field workshops; they include the complete overhauls of components, assemblies and equipments.

### Road patrol

A patrol (or team) of RCEME tradesmen, in a vehicle, equipped with hand tools and a small quantity of spare parts, used to effect running repairs to vehicles stalled on an army route. The team is detailed to work over a fixed section of the route. Depending upon the circumstances, a recovery vehicle and crew may be assigned to the patrol to effect route clearance..

### Servicing

Cleaning, adjusting and lubrication carried out at regular intervals or under a recognized system by a unit having equipments on its charge to ensure that these equipments are constantly in serviceable condition.

### Repair classification

Repairs are classified according to the amount or type of work they involve, into three groups:

- a. Unit repairs. Are minor repairs, replacements, and adjustments that can be carried out in unit areas by unit tradesmen or in the LAD servicing the unit.
- b. Field repairs. Are those beyond the capacity of units and LADs and mainly comprise the replacement of defective assemblies. In addition certain repairs to assemblies and other items are classified as field repairs.
- c. Base repairs. Are those beyond the capacity of field workshops. They include the complete overhauls of components, assemblies and equipments.

ESTABLISHMENT PLANNING CHART

Trade	Productive Tdn Required For 1000 Wh Vehs (Including Trlrs)		
	First Line (Unit Tdn) and LADs	Second Line (Fd Wksp)	Third Line (Med Wksp)
Electrical	6 (a)	5	1
Vehicle	94 (a)	51 (d)	17 (d)
Welding	5	2	1
Other Trades(c)	0	6	2
TOTAL	105	64	21

Trade	Productive Tdn Required For 100 Med Tks (b)		
	First Line (Unit Tdn) and LADs	Second Line (Fd Wksp)	Third Line (Med Wksp)
Electrical	66 (a)	64	21
Vehicle	600 (a)	375	125
Welding	10	25	8
Other Trades (c)	0	29	10
TOTAL	676	493	164

NOTES

- (a) Unit repair figures do not include supervisory personnel.
- (b) One medium tank for repair effort is equivalent to five APCs.
- (c) Other trades include machinists, leather and textile workers, painters and sheet metal workers.
- (d) Numbers include body repairmen.

SUGGESTED POINTS TO INCLUDE INRCEME UNIT STANDING ORDERS

1.	Aim and responsibilities of RCEME.	
2.	Command, control and organization of RCEME units.	Trade
3.	Responsibilities and duties of unit personnel.	Electrical
4.	Delegation of duties.	Vehicle
5.	Recovery organization generally.	Welding
6.	Repair organization generally.	Other Trades (c)
7.	Siting, movement and deployment.	
8.	Security and defence.	TOTAL
9.	Movement by road and march discipline.	
10.	Traffic control and route marking.	
11.	Standard unit markings and signs.	Trade
12.	Mines and demolitions.	Electrical
13.	Communications, message priorities and security classification.	Vehicle
14.	Office procedure.	Welding
15.	Reports and returns.	Other Trades (c)
16.	Distribution and location lists.	TOTAL
17.	Personnel matters including reinforcements, postings, promotions, awards etc.	
18.	Training and trade tests.	
19.	Unit operating procedures (headings only).	

20. Unit inspections.
21. General field administration - including field hygiene, medical, postal, welfare and recreation.
22. Dress and discipline.
23. Control of civilian labour.
24. Guards and picquets.
25. Fire, theft and explosion.
26. Messing and canteens.
27. Control and issue of POL and AMN.
28. Reporting enemy activity including nuclear strikes.

#### SUGGESTED POINTS TO INCLUDE IN

#### RCEME STANDING OPERATING PROCEDURES

1. Repair procedure in RCEME units including control, inspection and priorities.
2. Recovery and backloading procedures.
3. Recovery control.
4. Recovery teams, posts and patrols.
5. Recovery priorities, restrictions and definitions.
6. Equipment casualties - including handling and classification.
7. Equipment collecting points and backloading points.
8. Decontamination of equipment.
9. Condemnation of equipment.
10. Destruction of equipment.
11. Control of cannibalization.

12. Unit equipment inspections.
13. Disposal of vehicles and crews.
14. Disposal of repairable assemblies.
15. Removal of ammunition from damaged AFVs.
16. Modification and manufacture.
17. Use of enemy and liberated equipment and facilities.
18. Reclamation.

#### SUGGESTED POINTS TO INCLUDE IN

#### RCFME STANDING OPERATING PROCEDURES

1. Repair procedure in RCFME units including control, inspection and priorities.
2. Recovery and backloading procedures.
3. Recovery control.
4. Recovery teams, posts and patrols.
5. Recovery priorities, restrictions and definitions.
6. Equipment casualties - including handling and classification.
7. Equipment collecting points and backloading points.
8. Decontamination of equipment.
9. Condemnation of equipment.
10. Destruction of equipment.
11. Control of cannibalization.

RCEME REPORTS AND RETURNS

1. Daily SITREP or Location Report. Submitted by BEME and CREME and shows:
  - a. General situation.
  - b. RCEME casualties in last 24 hours in personnel and equipment.
  - c. Present locations of RCEME units in the formation.
  - d. Proposed moves, new locations and timings of RCEME units.
2. Daily Workshop State. Submitted by field workshops to HQ CREME for consolidation - may have separate parts for A vehicles, B vehicles and miscellaneous equipment. It will contain information as follows:
  - a. Type of vehicle or equipment.
  - b. Number completed.
  - c. Number received.
  - d. Number backloaded or transferred to another workshop.
  - e. Number awaiting parts or assemblies.
  - f. Total on hand and in the workshop.
  - g. Forecast completion in next 24 or 48 hours.
3. Daily or Weekly Vehicle Casualty State. Submitted by all RCEME units and sub-units including recovery control and BLP to BEME or CREME for consolidation. They include the following information on each type of vehicle:
  - a. Number not recovered together with the type of casualty, ie, X, Y, Z or BR.

- b. Repairable casualties collected forward of field workshop.
  - c. Repairable casualties in field workshop.
  - d. Casualties for backloading by corps.
  - e. Number completed in field workshop.
  - f. Number recorded as written off by CAR number.
4. Weekly Major Assembly State. Submitted by field workshops to BEME or CREME and includes:
- a. Type of vehicle.
  - b. Number of assemblies backloaded by type.
  - c. Number of assemblies in stock by type.
5. Daily Casualty and Strength Return. Submitted by all RCME units to BEME or CREME. This return is submitted by all units in the formation and details will be found in Staff Duties in the Field 1949.
6. Miscellaneous. In addition to the above, the following reports and returns are normally required from all units:
- a. Daily fighting strength state.
  - b. Daily battle casualty report.
  - c. Weekly field return - officers.
  - d. Weekly strength state - OR.

**RESTRICTED**

**NOTES**

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